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The Role of the Group Context in Predicting College Students' Goal Orientations in a Cooperative Learning Setting: A Mixed Methods Study

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The Role of the Group Context in Predicting College Students' Goal Orientations in a Cooperative Learning Setting: A Mixed Methods Study

by

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To my family.

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The Role of the Group Context in Predicting College Students' Goal Orientations in a Cooperative Learning Setting: A Mixed Methods Study

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Achievement goal theorists have long argued that individuals' goal orientations are situated and contextual and can thus be manipulated and shaped by their social learning context (Ames, 1992; Brophy, 2004; Linnenbrink & Pintrich, 2002; Pintrich, Conley, & Kempler, 2003). However, despite the proliferation of group-based learning in classrooms today and the assumption that cooperative learning promotes student mastery goal orientation for developing competence, "there has been a neglect of the research on motivational processes in group learning contexts within the field of achievement motivation" (Pintrich et al., 2003, p. 329). This dissertation used a mixed methods approach to investigate cooperative groups as *subcontexts* (Pintrich et al., 2003) within an undergraduate course that incorporates cooperative learning as an instructional tool. From this sample, I investigated whether and how student- and group-level factors were associated with the type of goal orientations that students adopt within and outside their group context by measuring students' *social academic goal orientations* (Kim, Kim, & Svinicki, in press) for their cooperative group work and their *achievement goal orientations* for their general coursework. A total of 96 students agreed to allow their responses to all online course surveys to be used for research purposes. In addition, 2 of 8 groups in which all group members provided consent were selected to participate in individual interviews. In this embedded mixed methods design (Creswell & Clark, 2007), the quantitative data were the primary focus of analysis and the qualitative data were used

to enrich and explain the quantitative findings. Multilevel modeling results indicated that both student- and group-level factors significantly and positively predicted students' social academic goal orientations in their cooperative group work and students' subsequent achievement goal orientations in their general course. Furthermore, the qualitative findings indicated that students tend to focus on extrinsic and mastery-oriented goals in addition to individual roles within their cooperative groups. The findings from this dissertation lend promising implications for future researchers and practitioners interested in understanding when and how cooperative group work enhances or hinders students' achievement motivation.

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Chapter I: Introduction

Within the achievement motivation literature, it is argued that the classroom context can shape the type of achievement goal orientations that students adopt for *developing* (mastery) or *demonstrating* (performance) competence (Ames & Archer, 1988; Dweck, 1986; Elliot & Thrash, 2002; Fryer & Elliot, 2008; Nicholls, 1984; Pintrich, 2003). This theoretical perspective implies that "motivation is *not* a stable trait of an individual, but is more situated, contextual, and domain specific" (Linnenbrink & Pintrich, 2002, p. 314). Even goal theorists who have contended that achievement goals emerge from more stable, trait-like characteristics have acknowledged that an individual's goal orientations can be overridden by contextual situations (Dweck & Leggett, 1988; Elliot & Church, 1997). Given this compelling agreement within the achievement goal literature suggesting that educators can potentially influence the type of goal orientations that students adopt in their learning environment (Ames, 1992; Brophy, 2004; Dweck & Leggett, 1988; Elliot & Church, 1997; Linnenbrink, 2005), researchers in this field have begun to consider how specific instructional practices of *cooperative group learning* may influence students' goal orientations in various educational settings.

This line of research has suggested that classrooms that incorporate cooperative group learning as an instructional tool tend to predict higher student mastery goal orientation (Ciani, Summers, Easter & Sheldon, 2008; Nichols & Miller, 1993), intrinsic motivation (Hanze & Berger, 2007), academic achievement (Johnson, Johnson, & Taylor, 1993), and perceived classroom community (Summers, Beretvas, Svinicki, & Gorin,

2005; Summers & Svinicki, 2007) across various grade levels. While these studies suggest that cooperative group learning tends to generate beneficial student outcomes in the general classroom setting, they provide limited understanding of how the interdependence of individuals within the *group context* fosters these outcomes. That is, there are several methodological and measurement issues that must be considered when studying individuals nested within groups, such as the dependence on the group context of students' achievement goal adoption (Raudenbush & Bryk, 2002). Thus, it is important that statistical techniques are used that consider groups as *subcontexts* (Pintrich, Conley, & Kempler, 2003) that form their own social structures influencing the goal orientations that students adopt within and outside their group setting.

The notion that groups function as subcontexts within the classroom environment is not new. For example, Pintrich et al., (2003) contended, "even if students share perceptions of the teacher's practices and the classroom goal structure, the small group context may elicit different goals as students perceive it as a distinct subcontext" (p. 330). Likewise, Johnson and Johnson (1989; 2002) and Slavin (2011) have argued that an individual's cognition and motivation are bound to the group context through group processes such as social interdependence and social cohesion. Situated motivation theory posits that individuals are influenced by the social context that surrounds them, which in turn shapes their motivational processes (Volet, 2001). Furthermore, social cognitive theorists have long argued that "people working independently within a group structure do not function as social isolates totally immune to the influence of those around them" (Bandura, 1997, p. 469), but are rather social perceivers who are influenced by

interactions with others (Fiske & Goodwin, 1996). Given these contentions, goal orientation theorists have called for more research that examines "the mechanisms by which students come to endorse personal achievement goals within the group context" (Pintrich et al., 2003, p. 331). Investigating potential student- and group-level factors that influence the type of goal orientations that students pursue within and outside their cooperative group contexts is crucial to understanding how and when group learning may foster or hinder students' adoption of beneficial achievement goal orientations, which have in turn been shown to promote positive student outcomes.

More recently, researchers have found that perceived group characteristics may contribute to the type of goal orientations that students adopt within and outside their cooperative group context. For example, Blazevski, McKendrick, and Hruda (2005) found that college students' perceptions of group goal orientations interacted with their personal goal orientations in predicting social loafing behavior (exertion of less effort and motivation in group work). Specifically, students' perceptions of group performance orientations predicted higher student social loafing behavior, whereas group mastery orientations predicted higher student engagement. In addition, Summers (2006) indicated that shared achievement goals among sixth grade students' cooperative groups predicted their subsequent mastery and performance-avoidance achievement goals across time.

Furthermore, Kim, Kim, and Svinicki (in press) examined college students' achievement goal orientations by situating their motivation in laboratory cooperative learning contexts across two studies. They found that college students identify and adopt trichotomous *social academic goal orientations* within each achievement goal orientation

(mastery, performance-approach, and performance-avoidance) at the *individual* (Context 1), *individual-within-a-group* (Context 2), and *group-as-a-group* (Context 3) levels. Ultimately, their findings led them to develop a 3 (goal orientations) x 3 (contexts) social academic goal orientations scale. Overall, these studies challenge the assumption that cooperative group learning only promotes positive outcomes related to student mastery goal adoption, learning, and engagement. It may be possible that the extent to which cooperative learning enhances student mastery achievement goals may depend on students' perceptions and social interactions within their group context.

Purpose of the Study

In this mixed methods investigation, cooperative groups were examined as situated subcontexts within the classroom environment to determine whether students adopt separate goal orientations for attaining competence within their group context and their general course. Thus, I sought to investigate two types of goal orientation constructs: *achievement goal orientations* (students' perceptions of their personal goals in the general course) and *social academic goal orientations* (students' perceptions of their personal goals within the group context). Achievement goal orientations were examined as typically measured in previous achievement goal research through participant responses to survey items regarding their personal goals in the general course (e.g., "I want to learn as much as possible in this class"). In addition, students' goal orientations within their group context were measured by participant responses to survey items regarding their personal goals within their cooperative groups (e.g., "I want to learn as much as possible from this group work"). The latter goal orientation theory construct

is based on the newly constructed Social Academic Goal Orientation Scales developed by Kim, Kim, and Svinicki (in press), which measures the three goal orientation constructs across three levels within cooperative group settings. In this study, I use two scales from this instrument: Context 1-individual perceptions of their personal social academic goals in group work and Context 3-individual perceptions of their group's goal orientations (both at the student- and group-level).

Based on these goal orientation constructs, the current research had three main purposes: (1) to determine if student-level and group-level factors significantly predicted students' later social academic goal orientations, (2) to examine the role of group processing in moderating the relationship between students' individual perceptions of their group's goal orientations and their social academic goals in group work, and (3) to explore a *transfer of goal orientation* in which students' social academic goal orientations predict their subsequent achievement goals in the course. The third question also investigated group-level factors that may contribute to students' later achievement goals.

First, I sought to illuminate the complex relation among student- and group-level goal orientations by examining students' initial achievement goals for their course (as typically studied in achievement goal research; Harackiewicz and colleagues, 2008), students' initial social academic goals, and students' personal- and group-level perceptions of their group's goal orientations as predictors of students' social academic goals in their group context.

Situated motivation and socially shared cognitive perspectives provide a useful framework for investigating these relationships. First, situated motivation theory views

individuals' goals as situated within the group context. Second, social cognitive perspectives grounded in motivation theory and social psychological theories posit that individuals' cognition is dependent on the social context. Thus, these theories emphasize the importance of investigating group-level characteristics in predicting the goal orientations that students adopt within their group environment, and even beyond, into their general classroom setting.

Second, I sought to investigate how students' perceptions of their group's processing, in effectively working cooperatively to accomplish group tasks, might moderate the relationship between students' perceptions of their group's goal orientations and the type of social academic goals that students adopt in their group. Applying the theoretical perspectives of social interdependence and social cohesion theories in relation to group processing helped to capture the dynamic nature in which social interactions and experiences within the group context either facilitate or constrain students' adoption of certain goal orientations that are made salient in their group structures.

Third, I sought to explore a *transfer of goal orientation*, in which students' social academic goals in their group context and group-level goal orientations predict their subsequent achievement goals in their course. By examining the influence of students' social academic goals and group-level goal orientations in predicting students' subsequent achievement goals for the overall course, I sought to illustrate how student- and group-level factors in cooperative group work help to explain student achievement goal orientation outcomes.

Several theoretical approaches from achievement goal theory, social psychology, and the work on organizational behavior were used to support this hypothesized relationship. Particularly, studies from these literatures have suggested that individuals can *shift* their self-concepts based on perceptions of organizational values (Murphy & Dweck, 2010), unconsciously adopt perceptions of others' goal-directed behavior (Aarts, Gollwitzer, & Hassin, 2004), and that individuals' goal orientations can change across time (Fryer & Elliot, 2007; Muis & Edwards, 2009; Senko & Harackiewicz, 2005). Thus, it is expected that the group context would have some influence on the type of achievement goals students subsequently adopt for their course.

As with all quantitative research, drawing conclusions from self-reported survey data can often lead to ambiguous explanations for why or how certain relationships occurred or did not occur between the variables of interest. This issue is important to consider, especially when investigating and interpreting individuals' perceptions and interactions within their natural environment. Thus, the second part of the study used a qualitative approach to enrich and explain the quantitative findings by interviewing individual students from two groups who held distinct perceptions of group processing (i.e. group effectiveness): one high in perceived effectiveness and one low. From these interviews, I sought to gain a deeper understanding of the quantitative findings by asking students to: (1) describe their personal goals in their group work, (2) their perceptions of their group's goals, and (3) their perceptions of how they thought their group may have influenced their personal goals in their group and in their overall course. The qualitative

findings contributed to clarifying the similarities and differences across groups with different levels of perceived group processing.

Such research is important for several reasons. First, despite the proliferation of group-based learning in classrooms and the assumption that cooperative learning promotes students' mastery goal orientations, "there has been a neglect of the research on motivational processes in group learning contexts within the field of achievement motivation" (Pintrich et al., 2003, p. 329). Second, unlike previous studies, I sought to determine how the group context (i.e., group-level goal orientations and group processing) contributes to predicting the type of personal goal orientations that students adopt within and outside their cooperative groups. Third, I recruited college students from an actual university course that incorporates cooperative learning, which yields implications for future research and educators within the higher educational setting where forms of group-based learning are emphasized. Fourth, I utilized multilevel modeling analyses, which accounts for the nestedness of the dataset, in this case, students nested within groups. Furthermore, by conducting a mixed methods approach, I provided a richer description of the quantitative findings through individual interviews with students (Creswell & Clark, 2007).

Overall, this study explored the following quantitative research questions:

1. Do student-level perceptions of their group's goal orientations and group-level goal orientations predict their later social academic goals in their group context over and above their entering achievement goals and their initial social academic goals?

2. Does group processing moderate the relationship between students' perceptions of their group's goal orientations and their` social academic goals in their group work?

3. Do students' social academic goals and group-level goal orientations predict their subsequent achievement goals in their general course?

The following qualitative questions were investigated:

1. How do students describe their personal goals in their group?

2. How do students describe their perceptions of their groups' goal orientations?

3. How do students think their group influenced their personal goals in their group work and in their general course?

Throughout, the study addressed the following overall research question from the mixed-methods design:

1. How do the qualitative data enrich the quantitative findings about the role of the group context in shaping the type of social academic goals and general achievement goals that students adopt?

Chapter II: Literature Review

The research supporting the current investigation bridges the knowledge bases in the achievement motivation, social psychology, and organizational behavior literatures by exploring associations between students' perceptions from working in small-groups within a natural cooperative learning classroom setting and the goal orientations that they subsequently adopt in their situated group context and general course. In support of these objectives, the first purpose of the study applies situated motivation and socially shared cognition as frameworks to supporting the hypothesis that student-level and group-level perceptions of group goal orientations would predict the type of social academic goals that students adopt in their group context, over and above their initial achievement goals in their course and initial social academic goals. The second purpose of the study uses social interdependence and social cohesion theories to investigate the moderating role of group processing in the relationship between student-level perceptions of their group goals and their personal social academic goals. Finally, the third purpose of the study explores the possibility of a transfer of goal orientation to determine whether students' social academic goals and group-level goals predict their subsequent achievement goals for their general course. Before reviewing these three purposes and the research supporting each, this section presents the conceptualizations of the achievement goal orientation and social academic goal orientation constructs that are examined, followed by a review of the research on cooperative learning and student outcomes.

Achievement Goal Orientations

The process and function of achievement goal orientation theory has been conceptualized and researched in a variety of ways and across a diverse range of disciplines. Nonetheless, there seems to be an agreement among goal orientation theorists that achievement goals are cognitively based constructs that guide individuals' motivation and behaviors within various learning situations (Dweck, 1986; Elliot & Thrash, 2002; Fryer & Elliot, 2008; Nicholls, 1984; Pintrich, 2003). For example, according to Fryer and Elliot (2008), "the process of *achievement goal pursuit* represents an important aspect of self-regulation as goals provide a clear picture of the situation-specific strategies that students plan to use as well as the outcomes they seek to attain or avoid" (p. 53). Social-cognitive theorists within motivation and self-regulation theory have generally conceptualized achievement goals as *cognitive representations* with an end state centered on either *developing* (mastery) or *demonstrating* (performance) competence (Dweck, 1986; Elliot & Thrash, 2002; Fryer & Elliot, 2008; Nicholls, 1984; Pintrich, 2003). More recently, Hulleman and colleagues (2010), defined achievement goal adoption as "*a future-focused cognitive representation that guides behavior to a competence-related end state that the individual is committed to either approach or avoid*" (p. 423). The current study accepts these theoretical conceptualizations of achievement goal orientations.

Although there have been different labels associated with the achievement goal orientation constructs (that essentially mean the same thing), achievement goals have been primarily classified as mastery and performance goals (Ames & Archer, 1988) and

have more recently been distinguished into separate components as either "*approaching* positive outcomes or *avoiding* negative ones" (Hulleman et al., 2010, p. 423). Personally endorsing a mastery or performance achievement goal orientation has been shown to have important consequences for student motivation, learning, and achievement across all educational levels. Elliot and Harackiewicz (1996) posit that, "performance-approach and mastery goals both represent approach orientations grounded in self-regulation according to potential positive outcomes (the attainment of normative competence and task mastery, respectively)" (p. 462). Students who acquire *mastery goals* (also called learning or task-involvement goals) tend to focus on the process of constructing solid understanding of content in order to develop competence and knowledge to learn whatever tasks are designed to inherently teach them (Brophy, 2004). Traditionally, mastery-approach goals have been widely considered as the most positive form of achievement goal across a diverse range of settings (Fryer & Elliot, 2008, p. 56). Specifically mastery goals have been consistently associated with positive student outcomes such as adaptive patterns of learning (Elliot, McGregor, & Gable, 1999; Linnenbrink, 2005), challenge seeking (McGregor & Elliot, 2002), increased self-regulation (Pajares & Valiante, 2001), persistence (Elliot et al., 1999), and intrinsic motivation (Pekrun, Elliot, & Maier, 2006) in comparison to performance-oriented goals. Surprisingly, however, the literature yields mixed results in regards to the relationship between mastery goals and performance outcomes in the literature (Harackiewicz, Barron, Elliot & Thrash, 2002).

In contrast, students with *performance-avoidance goals* have been shown to be widely problematic in achievement situations, mainly due to fear of failure (Fryer &

Elliot, 2008). Students with performance-avoidance goals tend to focus on avoiding the demonstration of lack of ability, incompetence, or failure in front of others. Consequently, individuals with performance-avoidance goal orientation often refuse to accept achievement challenges from various tasks or situations (Brophy, 2004). In research studies, performance-avoidance goals have been consistently associated with detrimental student outcomes such as, maladaptive patterns of learning (Elliot et al., 1999; Middleton & Midgley, 1997), test anxiety (Elliot & McGregor, 1999), self-handicapping (Urdan, 2004), disengagement (Wolters, 2004), and lower student achievement (Elliot, Shell, Bouas Henry, & Maier, 2005).

At this point in the achievement goal literature, it has been established that mastery goals are more associated with positive student outcomes and performance-avoidance goals are associated with more negative outcomes. On the other hand, research on *performance-approach goals* (also called ego-involvement goals) has been relatively mixed. Students who endorse performance-approach goals tend to be more concerned about preserving their self-perceptions and public reputations by outperforming others and demonstrating competence, rather than learning for the sake of gaining knowledge and comprehension (Brophy, 2004). While research has found performance-approach goals to be associated with more detrimental student outcomes such as maladaptive patterns of learning by using surface-level processing strategies (Elliot et al., 1999; McGregor & Elliot, 2002), procrastination, and higher test anxiety (Harackiewicz et al., 2002; Linnenbrink, 2005), other studies have found more positive associations, such as individual interest, intrinsic motivation, and higher student performance outcomes. Such

positive findings support a *multiple goals perspective* in which performance-approach goals are complementary to mastery goals in certain achievement situations (Harackiewicz, Barron, & Elliot, 1998). However, unlike mastery goals, these more positive outcomes tend to be short-term (Harackiewicz, Barron, Pintrich, et al., 2002; Midgley, Kaplan, & Middleton, 2001).

Given the wealth of literature in achievement goal theory, it is argued that "mastery-approach goals are the most favorable to encourage to generate and maintain long-term student interest (Harackiewicz, Barron, Tauer, & Elliot, 2002) and well-being (Kaplan & Maehr, 1999; Pekrun et al., 2006)" in education (Fryer & Elliot, 2008, p. 66). There is substantial evidence from the literature that supports a *mastery goal perspective* in which "mastery goals are thought to be the most beneficial for all students across socio-emotional, cognitive, and achievement outcomes" (Linnenbrink, 2005, p. 198). In essence, achievement motivation research has supported the conclusion that in achievement situations "…*it is more desirable for people to be focused on mastering the tasks involved in these achievement situations than on competing with peers or worrying about how their performance will be perceived and judged by others"* (Brophy, 2004, p. 90).

The current study is based on the trichotomous goal orientation model of Elliot and McGregor (2001) in which three types of achievement goal orientations are proposed to measure student achievement goals in their general course: mastery, performance-approach, and performance-avoidance. The second goal orientation theory construct, which measures students' goal orientations within their group context, is discussed next.

Social Academic Goal Orientations

While it is assumed that cooperative learning situations would encourage students to adopt more mastery-oriented goals, "Until recently, however, attempts to better understand the possible context-dependent characteristics of achievement goal orientations in cooperative group learning contexts have been limited" (except for, Blazevski, McKendrick, & Hruda, 2005; Summers, 2006)" (Kim et al., in press, p. 3). In their recent article, Kim et al. (in press) proposed three different *contexts* of goal orientations: Context 1 - individual, Context 2 - individual-within-a-group, and Context 3 - group-within-a-group, which expand upon the originally proposed achievement goal orientation trichotomous frameworks (Elliot & Church, 1997; Elliot & McGregor, 2001; Midgley et al., 1998). According to this premise, students can adopt mastery, performance-approach, and performance-avoidance goal orientations in three different levels or contexts within a cooperative group setting. In two studies, the authors developed and validated three scales that measure goal orientations in these three contexts. While similar to Summer's (2006) conceptualization of shared achievement goals and Blazevski et al.'s (2005) conceptualization of group goal orientations in that they deal with goal constructs situated in the group work setting, the goal orientations proposed by Kim et al., are conceptually different in that they focus on achievement goal orientations focused on *academic* purposes (i.e., developing/demonstrating competence) that are socially influenced and situated in the group context. In addition, the social academic goal orientations measures are not social goals or social goal orientations in

that they do not measure student goals for getting along or supporting other members of the.

Through their two studies, the authors "supported the 3 (contexts) x 3 (goal orientations) model as a way to capture the complexity of goal orientations in cooperative learning" (Kim et al., in press, p. 38). However, they also note that there is much research needed to further investigate these constructs theoretically and empirically, especially within authentic classroom settings. In addition, they suggest the use of "qualitative methodology such as observations, videos, interviews, and other types of self-reported data along with the use of the newly proposed 3 x 3 scale" to enhance the understanding of the dynamics of motivation within cooperative learning contexts (p. 40). The current investigation incorporates the Context 1–individual's perceptions of their personal goal orientations in group work, in which a student's purpose for engagement in the achievement task in a group is to increase/demonstrate his or her own individual competence. I also use Context 3–individual's perceptions of their group's goal orientations, in which the aim of the collective agent is to engage in the group achievement task for the purpose of increasing/demonstrating the group's competence (Kim, et al., in press, p.12).

Measuring group-level social academic goal orientations.

There are several approaches to measuring group-level perceptions. One approach that is commonly used in the social-cognitive theory research, particularly in measuring collective efficacy beliefs, is to aggregate measures of individual members' (self-) perceptions. This type of aggregate measure of students' individual goal orientations in a

situated context would be a group mean of *self-referent* goal orientations to execute the particular functions they perform in the group. For example, an individual goal orientation survey item might read, "I wanted to learn as much as possible from this group work." Responses to "I"-referent statements would be calculated as a mean score of group goal orientation. This method has been used before in research measuring students' shared achievement goals by calculating a mean score of students' feelings about the importance of group work in their respective peer learning groups (Summers, 2006).

A second and conceptually recommended approach (Goddard, Hoy, W. & Hoy A. 2000, 2004) is to aggregate measures of individuals' perception based on *group-referent* perspectives. Instead of students' referencing to "I" statements, they would be referencing to "We" statements of group goal orientation perceptions. An example of a survey item measuring individual's perceptions of their group's goal orientation might read, "We wanted to learn a lot from working as a group" or "We wanted to learn as much as possible working in a group." These responses would then be calculated as a mean score of group goal orientation. This approach is aligned with Bandura's (1997) conceptualization that "perceived collective efficacy is an emergent group-level attribute rather than simply the sum of members' perceived personal efficacies" (p.478). This method has been used in previous research examining the influence of the group context on students' achievement goal orientations (Blazevski et al. 2005; Kim et al., in press; Summers, 2006).

A third approach is to ask group members to come to a consensus about their

sense of group goal orientations through a group discussion. According to James, Joyce & Slocum (1988), "there must be some consensus among group members about an organizational climate before the mean rating can be considered a characteristic of the organization" (as cited in Davidson, Kwak, Seo, & Choi, 2002, p. 232). However, a potential problem to consider when using this approach is the increased susceptibility to social desirability bias that can undermine the validity of the assessment and mask the within-group variability in collective perceptions (Bandura, 1997; Goddard et al., 2004). While the majority of evidence to date suggests "aggregates of individual perceptions of group capability do indeed tap into the perceived collective efficacy of organizations" (Goddard et al., 2004, p.7), more research is needed to fully understand what role agreement may play in the conception of perceived group goal orientations and its effects. Because both the group-referent aggregated and the group consensus approaches to measuring group-level variables are recommended in the literature and little is known about the differences in using one method over the other, this study compares both methods when analyzing group-level goal orientations.

In addition, the use of both quantitative and qualitative approaches when investigating the development of goal orientation theory constructs has been recommended in the achievement motivation literature (Anderman & Anderman, 2000; Horowitz, 2009; Turner, 2001; Volvet, 2001). According to Turner (2001), "mixed methods and mixed model studies make it possible to use both approaches so that research questions about the 'what' and 'how' and 'why' can inform each other" (p. 100; Tashakkori & Teddlie, 2010). The current study addresses these recommendations by

utilizing a mixed methods approach (Creswell & Clark, 2007).

Finally, given the similar nature between achievement goal orientation and social academic goal orientation constructs, Table 1 provides a description and labels for all variables used in the current study.

Table 1

Description of Variables

Variable Name	*Description*
Student-level	
Achievement Goal Orientations (Ago)	Students' perceptions of their personal achievement goal orientations *in the general course*: mastery, performance-approach, and performance-avoidance.
Social Academic Goal Orientations (Sag)	Students' perceptions of their personal social academic goal orientations *within the group context*: mastery, performance-approach, and performance-avoidance.
Perceived Group Goal Orientations (Gg)	Students' perceptions of their group's goal orientations: mastery, performance-approach, and performance-avoidance.
Group-Level	
Group Goal Orientations (GGmean)	Group goal orientations, calculated as a mean score, of students' perceptions of their group's goal orientations (calculated as a mean score).
Group Goal Orientations (GGconsensus)	Group goal orientations generated by the *Group Goal Analysis Activity* in which groups came to a consensus on their group goal orientations by completing the Context 3 Group Goal Orientations scale together in class.
Group Processing (GP)	Students' perception of their group's processing (i.e. group effectiveness in working cooperatively to accomplish group activities) (calculated as a mean score).

Note: Student-level social academic goal orientations originated from the Context 1 subscales and student-and group-level goal orientations were used from the Context 3 subscales (Kim et al., in press)

Cooperative Group Learning and Student Outcomes

From preschool to college, "cooperative learning is used at some level by hundreds of thousands of teachers" and is considered to be an innovative and effective teaching method (Slavin, 2011, p. 344). Forms of peer learning in the classroom context have been defined as *cooperative* or *collaborative* learning. Cooperative learning has been described as "the instructional use of small groups so that students work together to maximize their own and each other's learning (Gillies & Ashman, 2003, p. 168). Equally, collaborative learning has been defined as a type of group learning that is often used in classrooms to facilitate student engagement, motivation, and learning. Based on these conceptual similarities, cooperative and collaborative learning frequently have been used interchangeably in the literature. In this study they will be combined under the umbrella term of *cooperative learning*.

For many educators, utilizing cooperative methods in their classrooms is a way to help students learn from their peers, develop supportive relationships, and increase interpersonal skills. However, many instructors are unaware of how cooperative group work makes a difference in student learning as well. Moreover, many instructors may want students to focus on the process of learning and understanding course material from their cooperating peers. While these intentions for using cooperative learning in classrooms seem logical from the perspective of enhanced learning, little research has investigated students' goal orientations for attaining competence within cooperative group contexts.

Classroom goal structures and student goals.

According to behavioral and cognitive views of learning and motivation, the environment plays a crucial role in individuals' affective, cognitive, and behavioral outcomes (Ames, 1992; Linnenbrink, 2005; Turner, 2001). Achievement goal orientation theorists suggest, "small-group contexts may create different goal structures" that influence students' personal goal orientations (Linnenbrink, 2005, p. 199). In particular, goal theorists have suggested that instructional strategies may enhance the salience of distinct *classroom goal structures* that influence the goal orientations that students adopt. From this theoretical perspective, the nature of the tasks, authority structures, recognition, grouping formation, evaluation procedures, and time can impact students' goal orientations (TARGET; Epstein, 1987). When implemented appropriately, these dimensions have been described as promoting a mastery-oriented classroom goal structure that promotes students' mastery goal orientations (Ames, 1992). Particularly relevant to the current study is the dimension of g*rouping formation*, which represents the way in which students are divided or arranged into groups, the organization of groups, and frequency of group interactions in promoting student motivation and mastery goal adoption (Church, 1999). Epstein (1987) recommends that groups be constructed in ways that promote cooperative learning and minimize competition and social comparison among learners. According to TARGET recommendations, group assignments should be based on "friendships, common interests, or other considerations in addition to or instead of achievement level" (Brophy, 2004, p. 105). In addition, social psychologists have posited that *group composition* (e.g. group size, gender, and ethnic composition) and

group structure (e.g. status, norms, roles, and cohesion) influence group members cognitive processing (Fiske & Goodwin, 1996). However, few studies have specifically examined how individuals' perceptions of their group environment actually affect their cognitive and motivational processes.

Within the limited research in this field, researchers have generally found that grouping dimensions do influence student motivation in a variety of ways. For example, Ciani, Summers, Easter, & Sheldon (2008) investigated the relationship between choice regarding group membership and college student motivation within classrooms that utilized cooperative learning as an instructional tool. They found that the students who were allowed to choose with whom they collaborated had significantly higher intrinsic motivation and perceptions of classroom community than students who had no choice. The authors concluded, "students' attitudes in a particular class may vary as a function of whether the students or the professor decide group membership" (p. 627). These findings are consistent with the TARGET perspective in which the way students are divided into groups or the organization of the group influences student motivation (Ames, 1992; Epstein, 1987).

Within this vein of research, Ames (1984; 1986; 1992) examined the effects of *reward structures* on students' motivation. According to this perspective, there are three rewards structures in classrooms that can have contrasting effects on students' motivational outcomes: (1) *individualistic structure*—where students work on their own and are rewarded according to how they scored relative to absolute standards, (2) *competitive structure*—in which students are forced to compete with their classmates for

available rewards, such as grades that are based on a curve, and (3) *cooperative structure*—where students are encouraged to collaborate with peers and are rewarded in part, based on the quality of their groups products (Ames, 1984; Brophy, 2004, p. 89). Cooperative reward structures orient students more towards personal mastery goal adoption and fulfilling their moral responsibilities in meeting their group goals and objectives (Ames, 1984; Brophy, 2004). This notion suggests that cooperating group contexts may function as separate entities within the classroom and influence students to focus on particular personal- and group-level goal orientations.

Some studies have attempted to explain how group formation benefits students the most. In particular, Linnenbrink (2005) examined if and how upper elementary students with different entering personal goal orientations responded to three-classroom goal conditions (mastery, performance-approach, and combined mastery/performance-approach) based on feedback students received on their small-group activities in real classroom settings. During a 5-week mathematics unit, classrooms were designed based on the evaluation and recognition components of TARGET. The classrooms in the *mastery goal condition* emphasized the importance of learning, understanding, and improvement. Groups in the mastery condition were manipulated to receive feedback based on their improvement across a math unit. The *performance-approach conditions* emphasized social comparison and the importance of demonstrating both individual and group-level competence, with a particular focus on competition for high scores among the groups. Groups in the performance-approach condition were manipulated to receive feedback based on how well their group performed relative to other groups, were given

information on their group's rank, and had their groups' scores publically displayed in the classroom. The *combined mastery/performance-approach conditions* placed an emphasis on doing better than others while also trying to learn and understand course material. In the combined mastery/performance approach condition, groups received feedback about how much their group had improved compared to other groups and their points were also displayed in the classroom. The effectiveness of the goal conditions was formally assessed using self-reported posttest measures of students' personal mastery and performance-approach goals. It was hypothesized that the change in the classroom goal condition should influence students' personal goal orientations.

As expected, results from analysis of variance confirmed, "students' personal goals at the posttest were generally aligned with the assigned goal condition" (p. 209). For instance, students in the mastery condition reported significantly higher posttest mastery goals than students in the performance-approach condition, and students in the performance-approach condition reported significantly higher performance-approach goals than students in the mastery goal condition. These findings suggest that the classroom context may influence the types of goals students adopt, supporting previous research that has shown relatively high correlations between personal goals and perceived classroom goals (e.g., Nolen & Haladyna, 1990). Another interesting component to the research findings was that there were no significant Personal Goal x Classroom Goal Condition interactions, indicating that students' initial personal goal orientations did not change the way they responded to the classroom goal context. Interestingly, classroom goal conditions and personal goal orientations related in different ways to student

outcomes. Specifically, outcomes in the classroom goal condition supported the *multiple goal perspective* and personal goal orientations supported a more *mastery goal perspective* such that mastery goals were beneficial across a variety of learning-related outcomes. For instance, the performance-approach and combined classroom goal contexts were most beneficial to student achievement outcomes, and the combined classroom goal context was beneficial in reducing expedient help seeking, supporting the multiple goal perspective, whereas personal performance-approach goals were detrimental in terms of test anxiety and achievement.

These findings support previous research, which suggests *between-group competition* (groups competing with other groups) promotes participants' adaptive patterns of learning, engagement, and social interactions more than *within-group competition* (participants competing within groups) (Deutsch, 1949). Linnenbrink (2005) posited that between-group competition may have been promoted by a performance-approach classroom goal context, which might have fostered a greater sense of group cohesion, resulting in higher student achievement, whereas, personal performance-approach goals may have promoted more within-group competition (both within one's own group and with individual students in other groups), decreasing a sense of teamwork and ultimately hindering student educational outcomes. These theoretical assumptions suggest that not all group work may necessarily benefit student learning and achievement outcomes.

As a result of these findings, Linnenbrink recommended suggestions for future research. First, considering that the study did not find support for any Personal Goal x

Classroom Goal Context interactions and "given the mastery goal perspective is especially concerned about the recommendations for educators" (p. 208), it was suggested that future research make more unique or separate distinctions between findings regarding personal goals and classroom goal contexts (p. 208). Second, the author encouraged future research to examine the stable effects of personal goals in regards to the changing nature of personal goal orientations based on the classroom context. Third, she suggested that future research focus on constructing a better understanding of how objective classroom goal contexts relate to student-level outcomes over time. It was also suggested that future studies include performance-avoidance goals to "provide a richer picture of how goal orientations may or may not emerge on the basis of the goal context" (p. 209).

Additional research in this area has typically found significant relationships between cooperative learning settings and students' mastery goal orientations. For example, Nichols & Miller (1993) found that high school students in a cooperative learning algebra class tended to have a higher learning goal orientation (focus on improving knowledge or skills) than performance goals (focus on looking capable to others or finding ways to avoid looking incapable) compared to students in a traditional lecture class. In addition, Summers and Svinicki (2007) found that mastery goals were significantly higher for students in cooperative learning classrooms than non-cooperative classrooms in higher education, while performance-approach goals were significantly higher for students in traditional lecture classrooms. While these studies seem to paint a

clear picture of the benefits of cooperative learning on student mastery goal adoption and motivational outcomes, other studies have challenged these findings.

What about the Group Context?

Although several studies have examined students' goal orientations and motivation in classrooms that incorporate cooperative learning as an instruction tool, these studies failed to consider potential *group-level* characteristics in predicting these student outcomes. Isolating the individual from the social environment generates little knowledge about how the group context may have contributed to the learner (Fiske & Goodwin, 1996). That is, there may be certain group characteristic factors that explain why students adopt certain achievement goal orientations in their classroom and even within their group context. Further exploration is needed to improve our understanding of how individuals and groups orchestrate their goals and behaviors to accomplish desired outcomes.

The next part of this section will present the theoretical and empirical research that supports the three purposes of this investigation: (1) to investigate student- and group-level predictors of the social academic goal orientations that students adopt in their group context, (2) to examine group processing as moderating the relationship between student perceptions of their group's goal orientations and their personal social academic goal orientations, and (3) to explore a transfer of goal orientation theory in which students' social academic goals and group-level goal orientations contribute in predicting their subsequent achievement goals in their general course.

Purpose 1: Predictors of Social Academic Goals

While the theoretical perspectives of situated motivation and social cognition have been around for some time, to date, few studies have investigated the mechanisms by which students endorse personal goal orientations within the group context (Pintrich, et al., 2003). According to motivation theorists, "motivation and cognition are interrelated" (Hickey, 2003; Turner, 2001, p. 91). Similarly, social cognitive theorists have argued that, "cognition is always situated" (Levine, Resnick, & Higgins, 1993, p. 586). Given that achievement goal orientations have been conceptualized as cognitively based constructs that guide motivation, it is important to consider the situative nature of students' goal orientations within the cooperative group setting. Although some studies have examined student goal adoption and motivation in classrooms that incorporate cooperative learning as an instruction tool, these studies failed to consider possible group-level characteristics.

Situated motivation theory.

Traditionally, achievement motivation theorists have argued that "motivation is *not* a stable trait of an individual, but is more situated, contextual, and domain specific" (Linnenbrink & Pintrich, 2002, p. 314). Likewise, the social-cognitive perspective on motivation posits that learners' motivational beliefs are dependent on and situated within the classroom context (Pintrich et al., 1993). These perspectives imply that students' goal orientations may be created, shaped, and/or constrained by different situations and social interactions in the classroom environment. Specifically, situated motivation theory posits

that individuals are influenced by the social context that surrounds them, which in turn shapes their motivational processes.

Research in situated motivation has been described as:

> Locating goals and engagement in the dynamic activities of social systems or communities of learners, where individuals mutually influence each other and where the construction of motivational meanings reflects individuals' motivational beliefs, prior experience, and subjective appraisals of the affordances and constraints of the current situation. (Volet, 2001, p. 319)

In other words, the group context may present factors that are different from those found when students work independently in their general course. That is, "even if students share a perception of the teacher's practices and the classroom goal structure, the small group context may elicit different goals as students perceive it as a distinct subcontext" (Pintrich et al., 2003, p. 330). Pintrich et al., further suggest that sometimes classroom tasks are not clearly defined. Therefore, "students must often define the tasks for themselves, providing their own goals and structure" (p. 168). According to this perspective, students working within cooperative groups may often turn to their group members for support in clarifying academic tasks, thus influencing their individual conceptualizations of goals and structures for learning.

Perceived group goal orientations and student group engagement.

Recent research in the achievement motivation literature has attempted to understand how perceptions of *group goal orientations* may impact student motivation in cooperative learning settings. In particular, Blazevski et al., (2005) found that the extent

to which the group goal structure was perceived as mastery or performance-oriented related to group members' engagement in their group context. The researchers measured college students' perceptions of mastery ("We tried to get better at solving the problems as we went along") and performance-oriented ("We wanted to do the problems better than other groups") group goal orientations in a cooperative group context based on students' self-reported data. The researchers then collected data on social loafing, which is known to occur when students exert less effort and are less motivated to contribute to group work (Karau & Williams, 1993). Blazevsi et al. found that social loafing was more prevalent when the perceived group goal was performance-oriented. In contrast, less social loafing and more student engagement was associated with perceived mastery group goal orientation. Based on these findings and considering that previous research has linked social loafing behavior with high ego-orientation (i.e., also known as performance-approach goals) among students (Swain, 1996), it is expected that students who perceive themselves to be in a performance-oriented group context would endorse higher personal performance-approach and performance-avoidance social academic goal orientations in their group work than students who perceive themselves to be in a mastery group goal context.

Cognitive developmental perspectives.

The situative view of individual goal orientations is closely related to the sociocultural perspective of Vygotsky (1978) in that practices of the classroom can either facilitate or inhibit motivational patterns (Turner, 2001). Specifically, socioconstructivist theorists have emphasized the central importance of context in cognitive growth.

According to Vygotsky's and Piaget's developmental perspectives, social interactions and contradictions that happen in learning situations influence individuals' cognitive development. It may be possible that the type of social dialogue involved in the interpersonal process of negotiating and developing meaning while working on group activities may promote the salience of specific goal orientations that are both perceived at the student-level and socially shared at the group-level. Thus, these socially shared processes between cooperating peers may influence the goal orientations that students pursue within their group context.

Socially shared cognition.

According to Nye and Brower (1996), socially shared cognition is a collective form of information processing by groups that requires "collaboration among members who seek to encode, interpret, and recall information together rather than apart" (p. 58). Researchers in this field have suggested that individuals within groups interact to form *shared meaning* or *schemas* that depend on "expectancies, goals, and incoming information just as it does for individuals" (Fiske & Goodwin, 1996, p. xxiii). Consequently, the construction of meaning does not only occur with individuals, but it also occurs within group structures (Fiske & Goodwin, 1996). Furthermore, Fiske and Goodwin note that factors such as interaction-oriented goals, social relationships, subordinate status, accountability to third parties, and cognitive capacity-limiting conditions are all natural phenomena that occur within small group contexts, are relevant to the ecology of small groups, and "support the view of the social perceiver as situated in interaction contexts, often in small groups" (p. xxv). For example, features within the

social environment can influence the way people interpret their environment in negative or positive ways. Fiske and Goodwin (1996) also suggest, "the relationship between perceiver and environment is not unidirectional. The environment may influence the perceiver, but the perceiver also may manipulate the environment" (p. xxviii). Thus, the researchers encouraged future studies to consider individuals' responses and perceptions to their group environment on their individual cognitive processes.

Shared achievement goals on student goals.

In light of the theoretical perspectives mentioned above, Summers (2006) posited, "If classroom groups can share cognition as a function of peer learning experiences, they could also share goals" (p. 276). Within this theoretical perspective, both peers and the classroom environment may act as potential sources of influence on students' personal goals, suggesting that peer learning techniques, such as cooperative group learning, may play a role in shaping both individual and collective achievement goals. Specifically, "individuals participating in a peer learning group may see an academic opportunity to learn or to earn a good grade as a personal goal that is also shared by group members" (p. 278). From her investigation of the impact of *shared social* and *achievement goals* on sixth-grade math students' goal orientations in a peer-learning context, results indicated that collectively shared achievement goals of the importance of group work (calculated as a mean score) for students in their peer learning groups predicted students' personal mastery achievement goal orientation across time. Interestingly, shared achievement goals also significantly predicted students' performance-avoidance goal orientations across time. In this study, students' social goals were measured according to goals for

social intimacy in their groups, and academic achievement goals were measured using a modified scale from PALS (Midgley et al., 1998) that included scales measuring task goals, performance-avoidance goals, and performance-approach goals about math. The shared social and achievement goal scales were developed from modified group processing scales that were originally evaluation-oriented statements. These scales were changed to signify goal-oriented statements about students' math class, such as (*shared social goals*: "I think it's important to make friends in math class") and (*shared achievement goals*: "It's important to me that my group helps me learn math"). Due to the lack of variance between peer learning groups for task orientation preventing the use of a hierarchical linear model, regression analysis indicated that students who valued the importance of group work as a learning activity (shared achievement goals) positively and significantly predicted high student task orientation toward the end of the school year. Interestingly, at the peer learning level, hierarchical linear modeling analysis indicated that students who belonged to groups with high levels of shared achievement goals in math predicted positive and significant change in students' performance-avoidance orientations across time. These findings indicate that certain group contexts may trigger social comparison behaviors among group members.

Social comparison theory.

Many researchers agree that educational settings are rarely free from performance-approach goals, even when mastery goals are promoted (Darnon, Dompnier, Gilliéron, & Butera, 2010, p. 212). For instance, while previous research has argued that only performance-oriented goals predicted higher social comparison behavior (Ames,

1992; Maehr & Midgley, 1991), researchers have found that mastery goals were also related to social comparison orientation (SCO, the tendency to search for social comparison information) (Darnon et al., 2010, p. 212). Specifically, Darnon et al., (2010) found that mastery goals predicted interest in social comparison when there was higher performance-approach goal endorsement, in the case of an interaction multiple-goal endorsement among individuals. Thus, investigating students' goal orientations within the group context is important given the proliferation of cooperative learning practices and competitive grading structures at the college level. It is possible that teachers may inadvertently make salient students' need for social comparison within- and between-groups (Darnon et al., 2010). For instance, it is common for teachers to require students to share information with the class as a collaborative learning group. In addition, students may have conversations about their performance on exams and assignments in the course with their cooperative peers. These situations may put additional pressure on students to "know the right answer" or to "avoid embarrassment" (Summers, 2006, p. 287). Therefore, it is important that educators not automatically assume that all group work will lead students to adopt mastery goal orientations. Future research is needed to investigate the significant and explicit role of the group context in facilitating the goals that students adopt in their cooperative group work. Such research could also be more richly informed by qualitatively based approaches to gain a deeper understanding of how individuals describe specific group dynamics in relation to their personal goals within their group. Moreover, motivation theorists have encouraged future research to advance traditional interpretations of motivation theory by taking a more situative approach to understanding

persons-in-situations (Turner, 2001, p. 85). The goal of the current study is to lead in this direction of researching student goal orientations as situated within the group context.

Purpose 1 Hypotheses

While previous research has primarily considered peer group influences at the individual-level; any change on an individual outcome should be associated with both student-level and group-level characteristics (Ryan, 2001; Summers, 2006). According to situated motivation and socially shared cognitive theories, the group context affects individuals' cognition and motivation. In addition, individual cognition and motivation have been posited as situated and socially shared (Levine, Resnick, & Higgins, 1993; Pintrich et al., 1993, 2003). This implies that it is possible that the group context may have more influence on the social academic goal orientations that students adopt in their group context than their initial achievement goals and initial social academic goals. Therefore, it is hypothesized that students' perceptions of their group's goal orientations would predict the type of social academic goal orientations that they adopt in their group context, more than their Time 1 achievement goals in the general course and their Time 1 social academic goals.

Specifically, in the present study, it is expected that students' initial achievement goals would have a low to moderate relationship with their Time 2 social academic goals. According to Ames (1992) and Epstein (1987), students tend to adopt the goal orientations that are most salient in their environment. If the group context is perceived as emphasizing the salience of mastery group goals, in which the group is focused on developing learning and understanding, it is expected that students would adopt mastery

social academic goals. In support of this hypothesis, Blazevski et al. (2005) found that student perceptions of performance-oriented group goals ("We wanted to do the problems better than other groups") predicted higher student social loafing behavior than mastery-oriented groups. Considering that social loafing has been linked to high ego-orientation among students in previous research (Swain, 1996), it is anticipated that the salience of performance-approach or performance-avoidance group goal orientations, in which the group is focused on outperforming other groups or avoiding failure in front of other groups, would predict students' performance-approach and performance-avoidance social academic goal adoption in group work. Thus, I hypothesize that students' individual perceptions of their group's goal orientations would positively predict the same type of personal social academic goals within their group context.

In addition, I hypothesize that group-level goal orientations would significantly contribute in predicting students' social academic goals in their group work. It is anticipated that group-level mastery goals would significantly and positively contribute in predicting students' mastery social academic goal orientations. I also hypothesize that group-level performance-approach and performance-avoidance goals would significantly and positively contribute in predicting students' performance-approach and/or performance-avoidance goals. On the other hand, Linnenbrink (2005) noted that between-group competition, in which groups are focused on outperforming other groups, may enhance the social cohesiveness and teamwork within groups, thus enhancing individual's mastery goal orientations. Therefore, it may be possible that group-level performance-approach goal orientations contribute in predicting students' mastery social

academic goals. Furthermore, Summers (2006) found that sixth grade students shared achievement goals about the importance of group work in learning mathematics predicted students' Time 2 mastery and performance-avoidance achievement goal orientations. Summers' findings regarding the relationship between shared achievement goals and student personal adoption of performance-avoidance achievement goals may suggest that shared group goals for learning from other cooperative peers may put additional pressure on members to "know the right answer" or to "avoid embarrassment" (Summers, 2006, p. 287). Thus, shared mastery group goal orientation may also predict student adoption of performance-avoidance social academic goals in their group work.

An additional component to the first phase of the current study is to compare different methods of gathering group-level goal orientation scores. One approach that has been recommended in the social cognitive research is to aggregate measures of individuals' perception based on *group-referent* perspectives. In other words, calculating a mean score of individual's responses to "We" statements of group goal orientation perceptions (Bandura, 1997; Goddard, Hoy, W. & Hoy A. 2000, 2004). This method has been used in previous research examining the influence of the group context on students' achievement goal orientations (Blazevski et al. 2005; Kim et al., in press; Summers, 2006). On the other hand, statistical researchers have argued, "there must be some consensus among group members about an organizational climate before the mean rating can be considered a characteristic of the organization" (Davidson, Kwak, Seo, & Choi, 2002, p. 232; James, Joyce & Slocum, 1988). While generating group-level goal orientation scores through group member consensus has been recommended by

statisticians, a potential problem to consider when using this approach is the increased susceptibility to social desirability bias that can undermine the validity of the assessment and mask the within-group variability in collective perceptions (Bandura, 1997; Goddard et al., 2004). While educational psychologists have suggested, "aggregates of individual perceptions of group capability do indeed tap into the perceived collective efficacy of organizations" (Goddard et al., 2004, p.7) and students' perceptions of their learning context have been posited to accurately predict the type of achievement goals that they adopt (Linnenbrink, 2005), more research is needed to fully understand what role of agreement may play in the conception of perceived group goal orientations and its effects. It is expected that there would be a significant difference in the group consensus and aggregated mean scores of group-level goal orientations. Considering the likelihood of social desirability bias when collecting group consensus measures, I hypothesize that the group consensus scores of group goal orientations would be significantly higher than individual aggregated mean scores.

It is also expected that the relationship between student-level perceptions of their group's goal orientations and students' social academic goals would depend to some extent on the their perceptions of their group's effectiveness in working cooperatively in accomplishing group activities. The next section discusses this portion of the current investigation.

Purpose 2: The Moderating Role of Group Processing

As demonstrated in previous research, while courses that use cooperative learning have been shown to be associated with higher student mastery goal orientation,

cooperative group work does not always promote students' mastery goals (Summers, 2006). To date, the reasons for why students may adopt more performance-oriented goals in cooperative group work are unclear. One explanation that is not surprising is group processing or the extent to which groups are effective in cooperatively achieving group activities. For example, while "team members can share information, engage in coordinated actions to achieve common goals, redistribute responsibilities in light of new task demands, and motivate one another to work hard… these advantages do not always lead to effective team performance and productivity (Levine & Choi, 2004, p. 153). Factors such as member motivation and coordination processes can often influence the group dynamics and team outcomes. Motivational perspectives on cooperative learning suggest, "cooperative incentive structures create a situation in which the only way group members can attain their own personal goals is if the group is successful" (Slavin, 2003, p. 44). Although this relationship seems logical in regards to students' personal goal orientations in cooperative group work, only a few empirical studies have actually examined it. In addition, it is important that educators do not assume students will have the social skills or motivation to work as an effective team (Alderman, 2004). In many cases, "teachers (to their dismay) occasionally think students such as those in college preparatory classes will automatically have skills to work effectively as a group" (Alderman, 2004, p. 223). However, this may not always be the case. While there are several types of group-based learning structures used to facilitate cooperative learning, achievement, and motivation, "the most important factor is that groups operate effectively" (p.221).

According to Pintrich et al. (2003), "it is the nature of the group's interaction that heightens the potential that students will evoke a personal goal specific to the group context" (p. 330). In addition, Summers and Svinicki (2007) argued that it is important that "students also perceive that their groups are effective at working together to reach their task goals" (Summers & Svinicki, 2007, p. 63). These perspectives suggest that when members perceive their group to be effective in accomplishing group tasks, this likely implies that groups are also being successful in attaining their desired personal and group goal orientations. Consequently, it may be possible that group processing would affect the degree to which the salience of certain group goal orientations predicted the corresponding social academic goals that students adopt in their group work. In order to address the second purpose of this investigation, I will first discuss the conceptualization of group processing in the current study and present the supportive theoretical and empirical research.

Group processing.

Within the social psychological literature, the function of group processing in cooperative learning groups has been described as a process in which members discuss and reflect on the effectiveness of their group's functioning (Yager, Johnson, Johnson, & Snider, 2001). More specifically, group processing has been defined as "reflecting on a group session to describe what members actions were helpful and unhelpful and to make decisions about what actions to continue or change" (Yager et al., 2001, p. 390). Overall, the purpose of group processing is to identify and understand ways in which the members of the group can contribute in improving the effectiveness of their collaborative learning

efforts. The importance of group processing has also been emphasized in the achievement motivation literature, which indicates that when students are working cooperatively, they are more likely to adopt mastery oriented goals for attaining competence through learning and understanding what tasks are designed to teach them (Ames, 1984; Brophy, 2004, p. 89). In light of these findings, the group dynamics literature posits, "cooperative learning groups need to process how well they are functioning in order to maximize their effectiveness" which in turn would lead to higher perceptions of cooperativeness and achievement of outcome goals (Johnson & F. Johnson, 1982; Yager et al., 2001, p. 390).

Social interdependence and social cohesion theories.

According to social theories of group learning, "when group members experience interdependence, the achievement of their goals depends on the other members of the group" (Johnson & Johnson, 1991; O'Donnell, 2006, p. 781). More specifically, Johnson and Johnson (1989) posited that social interdependence occurs when individuals share common goals and success of the group depends on every member of the group. O'Donnell (2006) explained this theory in relation to a relay team, "no one on the team succeeds unless everyone on the team does" (p. 782). In other words, when individuals have to rely on their group members in order to achieve their personal goals, the collective effort and cooperation of group members becomes a vital component in determining the attainment of that student's goals. Interestingly, Johnson & Johnson propose, "individuals perceive that they can reach their goals if and only if others in the group also reach their goals. Thus, individuals seek outcomes that are beneficial to all

those with whom they are cooperatively linked" (Johnson & Johnson, 1995, p.207). This requires that members not only understand each other's personal goals, but also share those same goals. Thus, in order for cooperative learning to be successful, positive interdependence must take place in which group face-to-face interactions and interpersonal relationships are viewed as positive.

Similarly social cohesion theory posits, "the effects of cooperative learning are largely dependent on the cohesiveness of the group" (Slavin, 2011, p. 345). According to this perspective, "students help each other learn because they care about the group and its members and come to derive self-identity benefits from group membership" (Slavin, 2011, p. 345). Social interdependence and social cohesion perspectives suggest that the social motives and individual accountability within group contexts can influence the quality of individual learning and motivation. Recent research has suggested that the perceived effectiveness of group work may impact the extent to which individuals adopt mastery goal orientation in cooperative learning contexts.

Social cognitive theory.

Researchers within social psychology and motivation have suggested that, "small group research and social cognition research need each other" (Fiske & Goodwin, 1996, p. xiii) and "it may be impossible to understand individuals' motivation without also understanding the social context in which it occurs" (Gillies & Ashman, 2003, p. 142). According to social cognitive theory:

> People working independently within a group structure do not function as social isolates totally immune to the influence of those around them…the resources,

> impediments, and opportunities provided by a given system partly determine how efficacious individuals can be, even though their work may be only loosely coupled. (Bandura, 1997, p.469)

This line of research suggests that people are affected by social interactions through modeling, persuasion, and group norm processes. Forgas & Williams (2001) noted "Social influence shapes not only our behaviors, but also our thoughts, memories, and cognitive representations" (p. 4). Social influences within group structures play a role in shaping individuals' cognitive beliefs about their self-capabilities. For example, Bandura (1986, 1997) suggests that learners can vicariously judge their own competencies through the success of others and often appraise their own capabilities by social comparison and group norms (Bandura, 1997). An important aspect of vicarious experience is the perceived similarity between the model and learner. In other words, seeing people similar to one's self succeed can influence individuals' perceptions of their own capabilities and behaviors. Thus, it may be possible that within a cooperative learning context, seeing peers who are more oriented towards developing competence (mastery-oriented) succeed at a task or get praised by the instructor may influenced individual members within that group to adopt similar goal orientations.

Additionally, as evident in human nature, organizational life is also filled with verbal exchanges that communicate expectations, sanctions, and rewards to members through social persuasion (Goddard et al., 2004). Examples of social persuasion may involve encouragement or specific performance feedback from the instructor or group members, or it may involve outside discussions about the ability of the group to perform

specific tasks. When actions of individual members have consequences for the group, specific social norms develop in order to provide some influence over the actions of others. In particular, Goddard, et al. (2004) specifically described this notion within the school culture. For example, in a school with high-perceived collective efficacy beliefs (perceived effectiveness of a group, as a whole, to accomplish a given task), a teacher whose actions are inconsistent with the faculty expectations for improving student outcomes is likely to be sanctioned by the faculty (Goddard, et al., 2004). According to this perspective, when actions have consequences for the group, group norms can serve to encourage and inspire individual members' beliefs and behaviors. Further research is needed to study the phenomenon of group-referent perceptions in regards to the influence of perceived group goal orientations on student motivation within the cooperative learning context.

Student goal orientations, group effectiveness, and classroom community.

Summers and Svinicki (2007) indicated that students' perceptions of whether they believed their group worked collectively towards achieving their learning tasks (i.e., interactive learning- "In this class, my classmates and I actively worked together to help each other understand the material") significantly mediated the relationship between students' personal mastery and performance-avoidance goal orientations and their sense of classroom community in their cooperative learning classroom. In contrast, interactive learning was not a significant mediator for the non-cooperative learning model, which represented students in traditional lecture classrooms. These findings dictate "if students perceive their group is working collectively towards the achievement of their personal

goals, it should result in positive outcomes such as classroom community" (Summers, 2006, p. 63; also see Johnson & Johnson, 1989). Interestingly, both mastery and performance-avoidance goal orientations were indirect predictors of classroom community. Summers and Svinicki (2007) suggest that while the relationship between performance-avoidance and interactive learning seems contradictory, there may have been some competitive elements to the cooperative learning experience that were not tested in the study. Therefore, it is suggested that both researchers and educators "monitor the effectiveness of cooperative learning with measures of motivation and perceived group effectiveness" (Summers, 2006, p. 63). The role of group processing is important for educators to understand because in many ways students' experiences in cooperative group work impact their interpersonal skills for communicating well with peers, future colleagues, and teaching people. To do this, additional research is needed to indicate the extent to which group process influences the goals that students pursue in cooperative group work and beyond.

Purpose 2 Hypotheses

I hypothesize that group processing would moderate the relationship between students' perceptions of their group's goal orientations and the social academic goal orientations that students adopt in their cooperative group work. In particular, it is expected that high group effectiveness, in which students perceive their group to be working effectively together in accomplishing group tasks (calculated as a mean score) would more accurately predict the relationship between students' individual perceptions of mastery group goals and their adoption of personal mastery social academic goals. In

addition, it is anticipated that high group processing would more accurately predict the relationship between students' perceptions of performance-approach and performance-avoidance group goal orientations and their personal mastery social academic goals. While this hypothesis may seem counterintuitive, previous research has found that when groups compete with other groups (between-group competition), participants tend to endorse more adaptive patterns of learning, engagement, and social interaction than when participants competed within groups (within-group competition) (Deutsch, 1949; Linnenbrink, 2005, p. 208). Linnenbrink (2005) further explained this phenomenon by suggesting that between-group competition (group performance-approach goals) may help to reinforce a sense of group cohesion, whereas within-group competition (personal performance-approach goals) may foster individual competition both within one's own group and with individual students in other groups (p. 209). Thus, perceptions of performance-approach group goals may promote a sense of group cohesion and teamwork that may ultimately enhance the focus of learning and mastery-oriented goals among group members. In the current investigation, it is expected that high group effectiveness would significantly moderate the relationship between performance-approach group goals and students' adoption of mastery social academic goals in their group work.

In addition, Summers and Svinicki (2007) found that when students perceived that their group was working successfully in collectively achieving their personal mastery and performance-avoidance goals, they had higher perceptions of classroom community. This finding implies that students' perceptions of group effectiveness in achieving their

personal mastery and performance-avoidance achievement goals, may be related to a sense of group cohesion and teamwork among group members, thus enhancing the focus on mastery-oriented goals. Thus, it is possible that high group effectiveness would also more accurately predict the relationship between student-level perceptions of performance-avoidance group goals and students' mastery social academic goals in a positive way.

On the other hand, Summers (2006), also found that students in groups that collectively valued the academic goals of group work positively and significantly predicted students' performance-avoidance goals over time. Summers posited that the more students value the achievement goals of their peer learning group, the more students may also value the opinions of their group members, therefore, "the more they are sensitive to others' evaluations, and thus are concerned with avoiding embarrassment in their groups" (Summers, 2006, p. 286). However, since the shared achievement goal scale used in Summers' study specifically asked students questions about the importance of group work, it is unknown whether groups with varying degrees of group effectiveness actually contributed in fostering group members' performance-avoidance goals over time. This research suggest that while "group work is typically affiliated with fostering motivation and social support among group members" (Summers, 2006, p. 286, also see Nelson, 1994), classrooms that utilize cooperative learning practices may make students more conscious of group members' evaluations, thus leading them to adopt more self-protective goals. In light of these findings, it is also possible that group effectiveness would moderate the relationships between perceived group goal orientations (mastery,

performance-approach, and performance-avoidance) and students' adoption of performance-approach and/or performance-avoidance social academic goals.

Purpose 3: Predictors of Achievement Goals

Transfer of goal orientation.

Social psychologists have argued that individuals can shift their self-concepts to align with the desirable goals valued by an organization. According to Pintrich et al., (2003), "the small group may present additional and perhaps conflicting cues that students must synthesize into their perceptions of the classroom goal structure, which would subsequently influence personal goal orientation" (p. 330). From this research, some logical questions that achievement goal theorists should consider are: (1) is it possible for students to pursue separate goal orientations in the group context and the general classroom context? (2) If so, do students' goal orientations in their group work impact the personal achievement goal orientations that they subsequently adopt in their general course? Such questions could be posited to explore a *transfer of goal orientation theory*, in which students' social academic goal orientations in their group work predict the same type of achievement goal orientations that students adopt later in their general course. This influence could be described as an *enhancement, change,* or *shift* in students' achievement goal orientations in their course as a consequence of their student- and group-level goal orientations. This is another proposal of this study.

Stability of achievement goal orientations.

While some achievement goal theorists support the theory that motivation and cognition are situated, depending on the given context, other theorists argue that these

processes, including goal orientations emerge from more personal, trait-like characteristics, rather than from social and contextual factors. While motivation theorists have suggested that individual achievement goal orientations can be manipulated by the classroom context, recent research has provided support for both change and stability in achievement goals across time and over various academic tasks (Fryer & Elliot, 2007; Muis & Edwards, 2009, p. 266; Senko & Harackiewicz, 2005; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011). Change vs. stability of achievement goal orientations may be important in determining whether or not certain classroom contextual factors, such as cooperative learning groups, may significantly influence students' achievement goal orientations.

From a self-regulation perspective, Fryer and Elliot (2007) and Senko and Harackiewicz (2005) proposed that learners adjust their achievement goals based on a self-regulation context (Muis & Edwards, 2009). In particular, Senko and Harackiewicz (2005) found that achievement goals can be regulated and changed in two ways, through: (1) *goal switching* (a type of change in which individuals switch from one goal to another), and (2) *goal intensification* (a type of change in which individuals increase or reduce the level of goal endorsement, without switching the type of goals pursued) (Muis & Edwards, 2009, p. 266). Specifically, after receiving ongoing performance feedback on a series of tasks, students reflected on measures of achievement goal orientation in their general course. Results indicated that although students' goal orientations remained fairly stable across the semester, students who had poor exam performance significantly decreased in mastery-approach and performance-approach goals, and increased in

performance-avoidance goals, while the second study found that negative feedback reduced participant mastery goal pursuit. This study suggests that individuals can change the extent to which they pursue certain achievement goals based on competence feedback they receive from their learning environment.

Similarly, Fryer and Elliot (2007) found that all individuals' goal orientations changed to some extent over the course of an undergraduate course. Particularly, mastery-approach goals significantly decreased from exam 1 to exam 2, whereas performance-avoidance goals significantly increased, while performance-approach goals remained stable across exam times. Interestingly, students received normative feedback from all exams, which may have contributed to perceptions of a more competitive classroom environment, which has been shown to decrease students' mastery-approach goals and increase performance-approach goals (Urdan & Midgley, 2003; Ames, 1984).

In addition, Muis and Edwards (2009) conducted two naturalistic longitudinal studies in educational psychology undergraduate courses to examine stability and change in students' achievement goal orientations using four complimentary analytic techniques (differential continuity, mean-level change, individual-level change, and profile consistency). Results found moderate to large changes in achievement goal orientations across various tasks. These findings were consistent with Fryer and Elliot (2007), which supports that individuals' levels of achievement goal orientations have some stability but also can change over the course of a semester, such that performance-approach goals generally had higher levels of stability, whereas performance-avoidance and mastery-approach goals had lower levels of stability (Muis & Edwards, 2009, p. 275).

In her qualitative study of achievement goal orientations at an all male pre-med college, Horowitz (2010) conducted semi-structured interviews to find out under what circumstances students adopted extrinsic goals, mastery goals, or a mixture of the two. Her findings indicated that all students "possessed an underlying or baseline extrinsic goal orientation", 32% were primarily mastery oriented and 13% were primarily extrinsically oriented, with a large number of students not fitting into either category (p. 223). In addition, students rarely mentioned social comparison (performance) goals spontaneously. This failure to mention social comparison goals has also been discovered in a numerous qualitative studies (Brophy, 2005; Freeman, Gutman, & Midgley, 2002; Urdan & Mestas, 2006). Interestingly, Horowitz also found that goals could evolve and change. She noted that a few students indicated that their goal orientations toward a particular subject had changed upon exposure to a subject that interested them, in which they found themselves to become more mastery-oriented, or when they enrolled in a course in which they were "turned off" by the material or poorly taught by which they sought more to achievement a good grade in the course. Furthermore, students reported shifting their goals when exposed to peers at other universities. These students reported that their friends and peers attending other universities helped them to gain a different perspective about college, leading them to view college more as an opportunity to learn rather than to just focus on accomplishing extrinsic goals by performing well (p. 229).

While these studies indicate that goal orientations do change in response to situations that they experience in their learning environment, more recent longitudinally based studies have shown that such levels of increase or decrease in goal orientations are

relatively small (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011). For example, in a more recent investigation of goal stability and change, two longitudinal studies of students' achievement goal orientations within a school year found that students' motivational profiles were substantially stable. Among over 500 9th to 12th grade students, "about 60% of all students displayed a stable motivational profile over time", with less than 5% of students showing considerable change (Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011, p. 82). Additionally, in contrast to the idea of goals as responsive to the rewards structures operating in a given situation (Ames, 1984; Brophy, 2004, p. 88), Dweck and her colleagues argued that goal orientations emerge from more stable personal traits based on *entity* (fixed) *vs. incremental* (malleable) *theories of* intelligence, in that different personal theories would influence individuals' goal adoption (Dweck, 1986; Dweck & Leggett, 2000). According to Dweck's perspective, the theory that intelligence is malleable and can grow leads to greater mastery goal adoption, whereas the beliefs that ability is fixed and uncontrollable leads to greater performance goal adoption. Hence, goal orientations would be more predictable and remain fairly stable across time. On the other hand, even these goal theorists have "acknowledged that these more stable personal factors can be overridden by contextual situations" (Dweck & Legget, 1988; Elliot & Church, 1997; Linnenbrink, 2005, p. 209). Further research is needed to examine other potential antecedents that may influence achievement goal orientation adoption and student outcomes within cooperative learning settings to gain a better understanding of the consequences of cooperative learning on student goal orientations.

Organizational lay theories.

Research within social psychology and neuroscience suggest that, "social animals including humans share a range of social mechanisms that are automatic and implicit and enable learning by observation" (Frith & Frith, 2012, p. 287). In support of this perspective, Murphy and Dweck (2010) posited that organizations could endorse a culture of *genius* (entity) or a culture of *growth and development* (incremental), which can motivate people's inferences about that environment and subsequently affect their self-presentations, among other outcomes. In multiple studies, the authors examined how participants' perceptions of entity versus incremental lay theories at the group-level shape people's inferences about the personal characteristics valued by an organization and the individual effects that follow. According to Murphy and Dweck (2010), *organizational theory of intelligence* was defined as "the shared beliefs of people within a setting that intelligence is either a fixed and stable trait or a malleable and expandable quality" (p. 283). Together, results from these studies indicated that perceptions of an organization's implicit theory guided people's inferences about the characteristics valued among that organization. These perceptions shifted individuals' *self-concepts* (personal theories of intelligence) when there was an expectation that they would later engage or apply to that organization. Murphy and Dweck suggested that as people interact with others in specific environments, it is likely that "their own theories would be affected by the group's views through modeling, persuasion, cognitive dissonance, and self-perception processes" (p. 294). The researchers posited, "when people perceive that certain traits are desirable, these perceptions influence their current self-concept" (Murphy & Dweck, 2010, p. 284;

also see Kunda & Sanitioso, 1989). Thus, if students pursue the social academic goal orientations that are pursued by their group, which are also facilitated by course expectations, would they shift their personal achievement goals to meet these objectives? Furthermore, in supporting a transfer of goal orientation theory, studies have indicated that the appropriateness and strength of goal-directed behaviors influence the extent to which individuals transfer those goals in different contexts. This might be related to the following construct of *goal contagion theory.*

Goal contagion theory.

According to goal contagion theory, "simply perceiving another's goal-directed behavior can cause one to take on this person's motivation and unconsciously pursue the goal as their own (Aarts, Gollwitzer, & Hassin, 2004). Interestingly, the authors found support for this theory in that when goals were implied under positive, socially acceptable circumstances, individuals pursued the goal-directed behavior as their own without much conscious thought. However, goals that were pursued in a negative, unacceptable manner were more consciously perceived as less desirable and therefore, were less contagious. In sum, the findings suggest that people can take on the goals implied by the behavior of others in spontaneous or deliberate ways, depending on the situation. By taking on the goals of others, these actions may facilitate social functioning and coordination in achieving mutual goals, such as in cooperative group work. When considering the cooperative learning context, focusing on the process of developing competence through task mastery may be a direct goal that is both expected and acceptable in the classroom context, which makes this a desirable objective among group members. As a result,

students may automatically align their achievement goal orientations for the class to meet these expectations. It is expected that a transfer of goal orientation would occur, in that students shift their achievement goal orientations, as a result of their social interactions and social goals in cooperative group work, which will be further examined in the present study.

Purpose 3 Hypotheses

Because cooperative group work was such an integral part of the classroom in which this investigation took place, it was hypothesized that students' social academic goals in their group work would positively and significantly predict their subsequent achievement goals in their general course. Previous studies have found that students tend to endorse higher mastery achievement goals in their general course in classrooms that incorporate cooperative learning, compared to traditional lecture-based classrooms (Ciani et al., year; Summers and Svinicki, 2007).

Research has suggested that student goal orientations can and do change across time (Fryer & Elliot, 2007; Muis & Edwards, 2009; Senko & Harackiewicz, 2005; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2011) and can be overridden by social and contextual factors (Summers 2006; Linnenbrink & Pintrich, 2002). Therefore, it is likely that students' achievement goal orientations would be influenced by their social academic goal orientations. There is a possibility that performance-avoidance social academic goal orientations for learning in cooperative group work would predict students' mastery achievement goal orientations for learning in their course. Specifically, some students may want to focus more on mastering the course material on their own in the course in

order to avoid experiencing failure or being perceived as incompetent by their members in cooperative group work. On the other hand, Murphy and Dweck (2010) found that, "when people perceive that certain traits are desirable, these perceptions influence their current self-concept" (Murphy & Dweck, 2010, p. 284). Thus, if goals that students pursue within the group context are viewed as appropriate and beneficial to helping them attain competence in their coursework as a whole, it is likely that students would shift their achievement goals to match their social academic goals, supporting a *transfer of goal orientation theory*. Other studies have indicated that the appropriateness and strength of goal-directed behaviors influence the extent to which individuals transfer those goals in different contexts. Aarts, Gollwitzer & Hassin (2004) found support for this theory in that when goals were implied under positive, socially acceptable circumstances, individuals pursued the goal-directed behavior as their own without much conscious thought. However, goals that were pursued in a negative, unacceptable manner were more consciously perceived as less desirable and therefore, were less contagious. In sum, the findings suggest that people can take on the goals implied by the behavior of others in spontaneous and deliberate ways, depending on the situation.

Given these theoretical and empirical findings, it is hypothesized that in addition to students' social academic goal orientations, the same type of group-level goal orientations would also positively and significantly contribute to predicting students' achievement goal orientations in their general course.

Chapter III: Methods

This chapter presents the methods for the mixed methods investigation of the role of the group context in promoting students' goal orientations through the use of both quantitative and qualitative data. The methods used for the quantitative data are presented in section 1 and the methods for the qualitative data are discussed in section 2 of this chapter.

The first section of this study utilizes quantitative survey data based on student perceptions of student- and group-level variables. Student-level variables included *social academic goal orientations* (mastery, performance-approach, and performance-avoidance) for learning from group work, *achievement goal orientations* (mastery, performance-approach, and performance-avoidance) in the course as traditionally used in achievement goal research, and students' perceptions of their *group's goal orientations* (mastery, performance-approach, and performance-avoidance). Group-level variables included aggregated mean scores of individuals' group-referent perceptions of their group's goal orientations in addition to group consensus scores of group goal orientations, as recommended in the literature (Bandura, 1997; Davidson et al., 2002; Goddard et al., 2000, 2004; James et al., 1988). Furthermore, group processing was calculated as a mean score to represent a group-level variable for purpose two of this investigation.

The second section of this study is qualitative in nature and intended to enrich and explain the quantitative data by exploring three primary research questions based on how

students describe: (1) the type of personal goals that they tend to focus on in their cooperative group work, (2) their perceptions of their group goals, and (3) how students think their group may have influenced their personal goals in their group work and in their general course. To do this, I conducted six individual interviews with selected students who were part of a group with high and low group processing. From these data, I attempted to shed light on what students tend to focus on while engaging in group-based activities and the type group context that may enhance of hinder students' adoption of specific goals in their group work and course work in general.

Overall, this study explored the following quantitative research questions:

1. Do student-level perceptions of their group's goal orientations and group-level goal orientations predict their later social academic goals in their group context over and above their entering achievement goals and their initial social academic goals?
2. Does group processing moderate the relationship between students' perceptions of their group's goal orientations and their` social academic goals in their group work?
3. Do students' social academic goals and group-level goal orientations predict their subsequent achievement goals in their general course?

The following qualitative questions were investigated:

1. How do students describe their personal goals in their group?
2. How do students describe their perceptions of their groups' goal orientations?
3. How do students think their group influenced their personal goals in their group work and in their general course?

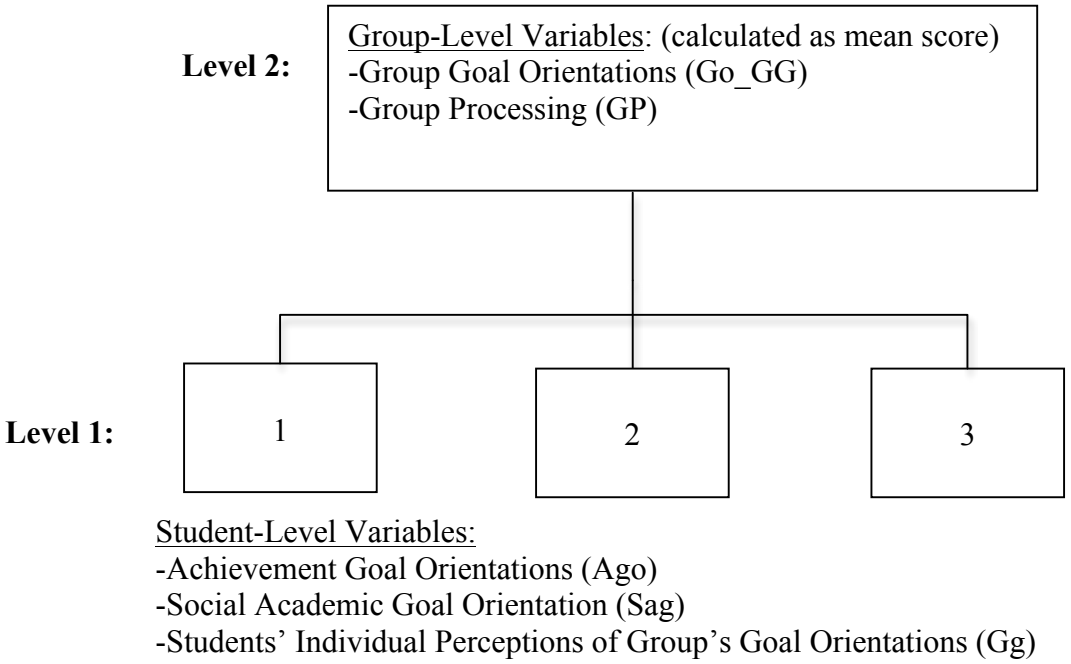
Throughout, the study addressed the following overall research question from the mixed-methods design:

1. How do the qualitative data enrich the quantitative findings about the role of the group context in shaping the type of social academic goals and general achievement goals that students adopt?

The variables used in the quantitative multilevel modeling analyses are presented in Figure 1 below.

Figure 1

Multilevel Model with Student- and Group-Level Variables



In addition, Table 1 provides a description and labels for all variables used in the current study.

Table 1

Description of Variables

Variable Name	*Description*
Student-level	
Achievement Goal Orientations (Ago)	Students' perceptions of their personal achievement goal orientations *in the general course*: mastery, performance-approach, and performance-avoidance.
Social Academic Goal Orientations (Sag)	Students' perceptions of their personal social academic goal orientations *within the group context*: mastery, performance-approach, and performance-avoidance.
Perceived Group Goal Orientations (Gg)	Students' perceptions of their group's goal orientations: mastery, performance-approach, and performance-avoidance.
Group-Level	
Group Goal Orientations (GGmean)	Group goal orientations, calculated as a mean score, of students' perceptions of their group's goal orientations (calculated as a mean score).
Group Goal Orientations (GGconsensus)	Group goal orientations generated by the *Group Goal Analysis Activity* in which groups came to a consensus on their group goal orientations by completing the Context 3 Group Goal Orientations scale together in class.
Group Processing (GP)	Students' perception of their group's processing (i.e. group effectiveness in working cooperatively to accomplish group activities) (calculated as a mean score).

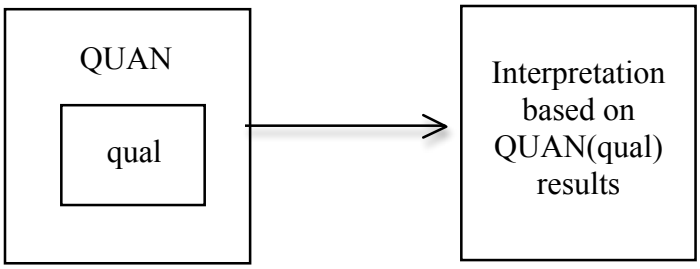
Note: Student-level social academic goal orientations originated from the Context 1 subscales and student-and group-level goal orientations were used from the Context

Embedded Mixed Methods Design

The use of mixed methods research has been recommended in order to enhance "the ability of the researcher to draw meaningful and accurate conclusions from all of the data in the study" (Creswell & Clark, 2007, p. 146; Tashakkori & Teddlie, 2010). Several researchers within the field of educational psychology have called for more mixed method research when studying motivation to increase the understanding of the meaning of various notions and theoretical constructs (Anderman & Anderman, 2000; Turner, 2001; Volvet, 2001). According to Creswell and Clark (2007), "mixed methods research involves both collecting and analyzing quantitative and qualitative data… to provide the researcher with a better understanding of the problem under investigation than if either dataset had been used alone" (p. 7). This combination of datasets provides a more complete picture by gathering in-depth knowledge of participants' perspectives. When choosing a mixed methods design, it is important to select the method that will fit the purpose of the investigation. Because the current study primarily relied on quantitative data to investigate the research questions and qualitative data to explain the subsequent findings, an *Embedded Design* is considered the most appropriate approach (Creswell & Clark, 2007, see Figure 2). This embedded approach allowed a more in-depth examination of the mechanism in which group processing influences the goal orientations that students perceive in their group and personally adopt in their group work. To do this, the quantitative and qualitative data are conducted and analyzed in different phases.

Figure 2

The Embedded Design Procedures (Creswell & Clark, 2007, p. 68)



As depicted in Figure 2, in the current embedded mixed methods study, the primary source of data is quantitatively based. The qualitative data are thus used as a second source of information to further enrich and/or support the quantitative data. The next part of this section begins by explaining the quantitiatve methods used in this investigation.

Section 1: Quantitative Methods

Participants.

While all students in the course agreed to participate in the quantitative phase of this investigation, a total of 91 out of 96 undergraduate students (77 female, 14 male) enrolled in a course in the Education Department that emphasized the use of cooperative group learning were used in the final analyses of this study. The students were mostly at the sophomore (38%) and freshman (29%) levels, with a few juniors (19%) and seniors (12%). Students ranged in age from 18 to 47, with two students identifying themselves as over 40. Students reported their ethnicities as Hispanic/Latino (36%), White/Caucasian (46%), Black/African American (4%), and Asian (16%). Most students were reported as

education majors (82%), with the remaining students as Business (2%), Communication (5%), Natural Science (2%), Liberal Arts (5%), and Undergraduate Studies (1%) majors. Finally, the majority of students reported having a moderate amount of cooperative group learning experience in school (73%).

Prior to the start of the study, students were assigned to 32 groups of 3 students per group, based on their interest in teaching a specific grade level and personal seating preference in the classroom. Upon campus-based IRB approval, I asked students to review and sign individual consent forms to participate in the study. Because the measures and procedures used in the study were part of the regular coursework, with the exception of the individual interviews, students were already completing the activities before being asked to grant me, the researcher, permission to use their previous and future course activities for the study. Participation in the study was completely voluntary, anonymous to the instructor and TAs of the course, and did not give students extra grade incentives in the course.

Survey measures.

All measures were part of the regular coursework and taken by students through a series of online Qualtrics surveys. Each scale was based on 7-point Likert scales anchored from 1 (strongly disagree) to 7 (strongly agree). Validity and reliability tests for each construct were analyzed and are presented in (Table 2, p. 64). A description of each measure is presented below.

Background questionnaire. Participants were asked to provide information regarding their gender, year in school, age, ethnicity, major, and level of cooperative group learning experience in school (Appendix A).

Achievement goal orientations in general course. Participants' achievement goal orientations were assessed by three scales, which have been recommended as adequate to measure college students' goal orientations (Harackiewicz et al., 2008; Hulleman et al., 2010). *Mastery achievement goal orientation* measured the degree to which students focused on the development of competence through task mastery in their course (e.g., "The most important thing for me in this course is to understand the content as thoroughly as possible"). *Performance Approach achievement goal orientation* assessed the degree to which students focused on the attainment of competence relative to others (e.g., "I want to do better than other students in this class"). *Performance Avoidance achievement goal orientation* assessed how much students focused on the avoidance of incompetence relative to others (e.g., "I just want to avoid getting a low grade in this class"). All items are presented in Appendix B. In addition, the presented in Table 2 demonstrate that the current sample was comparable to previously reported reliabilities, with the exception of one item removed from the performance-approach achievement goal scale ("It is important for me to do well compared to others in this class"), which increased the scale reliability from .80 to .83.

Social academic goal orientations in group work. Participants responded to the Context 1 subscales of the *Social Academic Goal Orientation* scales developed by Kim et al., 2011). The Context 1 subscales specifically measure students' personal social

academic goal orientations for learning in cooperative learning groups. The *mastery social academic goal orientation* subscale measures the degree to which students focus on increasing their individual competence in their cooperative group work (e.g., "I wanted to learn as much as possible from this group work"). The *performance approach social academic goal orientation* subscale measures the degree to which students focus on demonstrating their own individual competence compared to others in their cooperative group work (e.g., "It was important to me to do better than the other members in my group work"). The *performance avoidance social academic goal* subscale assesses the degree to which students fixate on avoiding failure and incompetency in their cooperative group work (e.g., "I just wanted to avoid doing poorly in my group"). All items are presented in Appendix C. In addition, the alphas presented in Table 2 demonstrate that the current sample was comparable to previously reported reliabilities, with the exception of performance-avoidance social academic goals, which had an alpha of .60 at Time 1.

Perceived group goal orientations. Perceptions of group goal orientations were measured at the student- and group-levels using the Context 3 subscales by Kim et al., (in press). The *mastery group goal orientations* subscale assesses the degree to which students perceive their group to emphasize the development of mastery and learning (e.g., "We wanted to learn as much as possible working as a group"); the *performance approach group goal orientation* subscale measures the extent to which students perceive their group to emphasize outperforming other groups (e.g., "We wanted to complete problems successfully better than other groups"); the *performance avoidance group goal*

orientation subscale asks whether students perceive their group as emphasizing the importance of avoiding incompetency and failure compared to other groups (e.g., "We did not want to look incompetent compared to other groups"). Students were asked to complete the Context 3 scales both individually (calculated as a mean score of individual perceptions of their group's goal orientations) and collectively (Group Goal Analysis consensus score) to compare scores from two methods for attaining group-level measures of group goal orientations. All items are presented in Appendix D. One item from the mastery group goal orientation scale was removed ("It is important for us to understand the content as thoroughly as possible"), which increased the scale reliability from .88 to .93.

Perceived group processing. Participants were assessed using a scale developed by Summers et al. (2005) to measure students' perceptions of the effectiveness of group work, after engaging in their cooperative group work (e.g., "Overall, my group was effective working together"). All items are presented in Appendix E. In addition, the alphas presented in Table 2 demonstrate that the current sample was comparable to previously reported reliabilities. This measure was calculated as a mean score of individual perceptions of their group's processing to represent a group-level variable.

Table 2.

Survey Subscale Reliabilities

Subscale	*n* (*items*)	*n* (sample)	α (current research) Time 1	α (current research) Time 2	α (previous research)
Achievement Goal Orientations					
Mastery	5	94	.88	.91	.87
Performance-approach	2	94	.83	.91	.87
Performance-avoidance	2	94	.84	.82	.78
Social Academic Goal Orientations					
Mastery	4	96	.88	.91	.90
Performance-approach	2	96	.79	.83	.82
Performance-avoidance	4	96	.60	.76	.77
Perceived Group Goal Orientations					
Mastery	3	96	.86	.93	.85
Performance-approach	4	96	.89	.85	.89
Performance-avoidance	2	96	.82	70	.85
Perceived Group Processing	6	96	.94	.89	.92

Achievement Goal Orientations (Harackiewicz et al., 2008)= student goal orientations in their general course.
Social Academic Goal Orientations (Context 1 subscale, Kim et al., in press)= student goal orientations in their group context.
Perceived Group Goal Orientations (Context 3 subscale, Kim et al., in press)=student perceptions of their group's goal orientations.
Perceived Group Processing (Summers et al., 2005)= students' perceptions of their group's effectiveness in working cooperatively in completing group activities.

Procedures.

Description of the course and group formation.

The overall objectives of the course were to provide students a solid foundation of theories in learning and motivation that inform learning and teaching strategies. The instructor of the course is a well-known expert in educational psychology and has a vast amount of teaching experience at the postsecondary education level. The classroom was structured to provide students with opportunities to engage in cooperative group work throughout the semester. As part of the regular course, students completed an online survey that gathered a series of information such as, the grade-level (e.g., first, second, or third grades) they were interested in teaching and where they preferred to sit in the classroom (e.g., front, middle, or back). From this information, the instructor and TAs of the course formed groups based on students' common interests in teaching the same grade-level and personal seating preference in the classroom. Within their groups, students completed various assignments including problem solving and lesson planning activities and remained in the same cooperative group throughout the entire semester.

In-class group activities.

In-class group activities were given to expand on course concepts and prepare students for their course exams. Students were given a variety of group activities to work on throughout the semester that related to problem solving, comparing examples, and checking for understanding. Each day's work that students completed in their groups could be submitted for up to 1 point credit towards their final grade for a maximum of 10 points. Students also received points for a *Group Design-a-class* activity in which they

were assigned to create a classroom lesson plan for their own selected topic from the Texas Essential Knowledge and Skills (TEKS). Three class periods (one for each unit) throughout the semester were devoted to this more in-depth work on *Group Design-a-class* application of theories to real life teaching scenarios. For example, in class, students were given 1 hour to work in their groups to analyze an instructional situation. Each group submitted their joint formal description of their analysis at the end of class to earn up to 20 points based on the correct use of the concepts and on the clarity of the description. Only group members in attendance on those class days could receive credit points. Students could earn up to 60 out of 300 points throughout the semester for their group work. Each student received the same amount of points for their group's work. If students were absent on one of the application days, they were given an opportunity to make it up individually during the final exam time.

Wave 1. During the first two weeks into the course, the instructor introduced students to the course assignments, including the online surveys and group activities. The instructor also briefly mentioned that while these activities were used as part of the regular coursework, students would be asked to allow the researcher (who was already introduced at this time) to use these data for research purposes later in the semester. During this time and on two separate occasions, students were sent a link via email to their first set of surveys from a Qualtrics database. Survey 1 was given to students before being assigned into their respective groups and asked them to respond to questions in regards to their initial *achievement goal orientations* for learning in the course, and demographic information. Survey 2 was given to students after the first day of being

introduced to their group members and engaging in a cooperative group activity. The survey asked students to respond to questions gathering information about their initial *social academic goal orientations* for learning in their cooperative group work.

Wave 2. After approximately 5 weeks of cooperative group work and after taking their first exam, students were asked to access the third online survey (Survey 3) in the same fashion as in Wave 1. Similarly, they were asked to complete a survey set gathering information based on their *social academic goal orientations* for learning in their cooperative group work, perceptions of their *group's goal orientations*, and perceptions of their *group's processing.*

Wave 3. After approximately 9 weeks of cooperative group work, students were asked to access the final online survey in the same fashion as in Time 1. This time, they were asked to complete a survey set gathering information about their mid-semester *achievement goal orientations* for learning in the course and mid-semester *social academic goal orientations* for learning in their cooperative group work. After completing the final survey, students were asked to engage in a *Group Goal Analysis Task,* in which they completed the Context 3 Social Academic Group Goal Orientation scale as a group, rather than individually. This group activity was used to generate group consensus scores of each group's goal orientations in order to compare the group goal orientation data that was calculated as a mean score.

All survey information was part of the class activities and used later as the basis for lecture material and in-class activities and were therefore required to the same extent that any coursework was required. During the 8th week of the course, students were asked

by the researcher to allow some of their course activities to be used for research purposes. If students provided consent to participate in all parts of the study (See Appendix H for consent form), they allowed the researcher to use their online survey data and *Group Goal Analysis* survey data for research purposes. Table 3 shows the relationship between course activities and data collection. Students were asked to allow their classwork to be used in the data analysis.

Table 3

Descriptions of Coursework

Activity	Course use	Research use
1. Student personal course goal orientation online surveys	For group formation and later analysis in Unit 3 on achievement goal orientation theory content task	Individual course goal orientation
2. Group goal orientation and group processing online surveys	For use in Unit 2 on social learning settings and again in Unit 3 on achievement goal orientation theory content task	Measurement of group and individual goal orientations
3. Group Goal Analysis Activity	Students in their groups will cooperatively complete a group survey and provide a collective reflection on their group work related to motivation.	Group analysis used as triangulation with quantitative data

Note. No additional incentives were given to students who participated in the study.

Section 2: Qualitative Methods

Participants.

Purposeful sampling was used to select participants based on three primary criteria. First, participants needed to have provided consent to participate in all three parts of the study: allowing the researcher to use their survey data, group analysis activity, and

participate in an individual interview with the researcher either in-person or by phone. Second, only groups in which all members provided consent on all three parts of the study were eligible to participate. Third, participants needed to be part of a group with either extreme high or low group processing (from calculated individual group-referent mean scores). The idea behind this sampling procedure is that participants' views about their group in affecting their personal goals in their group work would be reflected based on perceptions of their group's effectiveness in working together. "Typically, where cases are reported, a small number is used, such as 4-1" (Creswell & Clark, p. 112). The current study aimed to use a total of six participants across two groups (3 from a high group processing group and 3 from a low processing group). Thus, groups of individuals were selected based on their calculated mean score of group processing.

Of the 96 students who completed a consent form, 56 agreed to participate in an individual interview with the researcher. However, of the 32 groups, 13 groups met the criteria to participate in the study. The majority of these groups had high group processing, with 10 out of 13 obtaining a mean score of 6.22 to 6.83 out of a 7-point scale. Thus, scheduling individual interviews with members in a high group processing group was not a difficult task. On the other hand, it was exceptionally difficult to schedule interviews with students from low group processing groups, due to apparent scheduling difficulties. However, I did manage to conduct individual interviews with at least one group with the lowest group processing mean score in the classroom of 4.67 out of a 7-point scale. Of these selected participants across two groups, 2 were male and 4 were female.

Data collection.

After the 8th instructional week, six students were recruited for one-on-one interviews with the researcher at the participants preferred location. Only students who were members of the six focal groups were asked to participate in an interview. The interview was the only source of data that took place beyond the scope of the instructor's classroom expectations and consequently, asked students to do more than simply grant the researcher access to something they had already completed for the course. Recruitment for interviews were as follows: (1) selected students from the two focal teams were approached individually and discreetly (e.g., via email) and asked if they would be willing to grant the researcher a single interview of no more than one hour in length. They were told that the instructor and TA's were not aware that they, personally, have even been asked to participate in an interview, nor did they know whether they had agreed to the interview. Because the qualitative phase of the study was intended to explain the quantitative findings, semi-structured interviews were chose as the method of data collection to allow the researcher to obtain rich and descriptive data. The format of the semi-structured interviews allowed students to describe their goals in their group work in their own words and did not restrict their responses (Brophy, 2005; Horowitz, 2010; Urdan & Mestas, 2006). This allowed me to probe student responses to ask students to provide more explanation of their claims with examples or detailed descriptions. This method has also been recommended to obtain more accurate and valid data (Patton, 19990). In this study, the interviewees were recruited via email in spring

2012. Of the six individual interviews, 1 was conducted in person and 5 over the phone. All individual interviews were tape recorded and later transcribed.

Interview questions.

The interview protocol used in this study was guided by examples of qualitative and exploratory studies of student achievement goal orientations found in the Dowson and McInerney (2003) and Horowitz (2010).

The three main interview questions were the following: "How would you describe your personal goal(s) in your group work?, How would you describe your group's goal(s)?, Do you think your group's goals influenced your personal goal(s) in your group and work?, Do you think your group's effectiveness in working together influenced your personal goal(s) in your group work?" Several follow-up questions probed students regarding how they may have focused on particular personal goals and specific examples of how they may have interacted with their group members. Additionally, follow-up questions were asked regarding students' goals in their classroom in general compared to their goals in their group work.

The decision to frame the main interview questions more broadly in terms of students' goal(s), rather than on specific mastery or performance goal orientations was intended to keep the interview questions as open and exploratory as possible in order to capture what students actually focused on during their group work. Previous studies have found that students rarely raise the social comparison aspects of performance goals spontaneously and mostly report extrinsic goals such as, to get a good grade or complete one's work (Brophy, 2005; Freeman et al., 2002; Horowitz, 2010). Thus, I deliberately

worded the interview questions more broadly in order to best capture the concerns of students, hoping that this phrasing would most effectively bring out students' primary goals in their group work. According to Deshon and Gillespie (2005, p. 1105), the study of goal orientation is "fundamentally an examination of choice behavior" where "individuals must choose…to engage in certain types of behaviors or achievement situations" (as cited in Horowitz, 2010, p. 220). Other researches have argued, "the most effective way to find out the goals behind student behaviors is to ask students to explain both their behaviors and their goals" (Horowitz, 2010, p. 221; Lemos, 2004). Therefore, in this study, students were asked to describe not only what they were focused on the most, but also provide examples of the actions and word choices they used. Also, given my familiarity with the student population, I knew that the topic of group effectiveness would be a subject that students would easily recognize and understand. Therefore, it was expected that students would feel more comfortable reflecting on questions that asked them to provide their opinion about how effective their group worked together and how that may have influenced their personal goals in their group work.

The particular phrasings of the main interview questions and follow-up questions were also deliberately couched in a nonjudgmental manner by asking students questions in regards to their "personal opinion" and "how they may have defined or described a particular situation". These questions were intended to convey to students that their responses were both typical and normal and that there was no value judgment on my part regarding the behaviors or goals that they engaged in or shared during the interview (Patton, 1990; Horowitz, 2010).

On the other hand, despite the intended benefits of phrasing interview questions in a more broad and non-instigating manner, these approaches may have limited the study by not specifically capturing whether or not students thought about or endorsed particular goal orientations in their group work. However, due to the preliminary and exploratory nature of the study, I felt confident that these limitations were reasonable and acceptable (Horowitz, 2010).

Chapter IV: Results

In the current mixed methods investigation, the analyses and results from the two datasets are presented in separate sections. Section one is devoted to discussing the quantitative multilevel modeling analyses and results, while section two is dedicated to presenting the qualitative analyses and findings gathered from individual interview with selected group members.

Section 1: Quantitative Analyses

The purpose of the quantitative investigation was three-fold: (1) to determine if student-level and group-level factors significantly predicted students' social academic goal orientations, (2) to examine the role of group processing in moderating the relationship between student's individual perceptions of their group's goal orientations and their social academic goals in group work, and (3) to explore a transfer of goal orientation theory in which students' social academic goal orientations predict their subsequent achievement goals in the course. In addition, this question investigates group-level factors that may contribute to students' achievement goals.

Preliminary analyses.

Before proceeding with the primary data analysis, all variables were screened for possible code and statistical assumption violations, in addition to missing values and outliers in SPSS. Of the 96 students that completed the surveys at Time 1, 2 students who later dropped the course were eliminated from the dataset. After survey 1 was due in the course, 2 new students added the class. Thus, 2 missing values were detected for all three

Time 1 student achievement goals and demographic information. None was detected for students' social academic goals at Time 1.

In addition one group with constant missing values on Time 2 from one group member was removed from the entire dataset. In addition, another group was removed from the group-level goal orientation data because only one group member was present in class to complete the Group Analysis Activity. This left a total of 30 out of 32 groups of 3 members for generating the group goal orientation consensus scores and 31 out of 32 groups for calculating the aggregated mean score of group goal orientations. Missing values on Time 1 were handled by the HLM default method for missing values (pairwise deletion), thus these cases were not completely excluded from the data analyses.

Four univariate outliers were detected by inspection of the histogram distributions and examining standardized z-scores in SPSS (Grubbs, 1950). Values greater than 3 were considered outliers (Stevens, 2007) and were Winsorized to the next nearest value. Inspection of z-scores was repeated to detect additional outliers and these values were again set to their nearest neighbor. This process was repeated until no outliers were detected. Of the four outliers revealed, one on the level 1 group goal orientation measure (the outlier value of 3 was Winsorized to the next nearest value of 3.25), one on the group processing scale (the outlier value of 2.83 was set to 4.5), one on the mastery social academic goal scale (the outlier value of 3.25 was set to 4.5), and one on the performance-avoidance social academic goal scale (the outlier value of 3.5 was set to 4.5). Although Grubb's tests detected several outliers, further analysis of assumptions

detected no violation of normality, which permitted continuation of the analysis.

Multilevel modeling analyses.

As Pintrich et al. (2003) noted, "whether studying the classroom or small group context, it is critical that future research employ methods that account for the social nature of learning" (p. 331). While peer group influence is typically investigated at the individual level (Ryan, 2001), "change on any given outcome, such as individual achievement motivation, should be associated both with students' personal characteristics as well as characteristics of the group" (Summers, 2005, p. 281). I argue that the social academic goal orientations that students adopt in their cooperative groups would depend to some extent on the group context, resulting in a within-group dependency. The best way to investigate the influence of group-level and student-level effects is to use hierarchical linear modeling (HLM), so that one level represents the group effects and one level represents the individual effects. Statisticians recommend this multilevel modeling, compared to other traditional models (e.g. ANOVA, Multiple Regression), when studying individuals nested within groups because it prevents a violation of the assumption of independence and inflation of Type 1 errors by accounting for interdependence (Raudenbush & Bryk, 2002).

Centering of predictor variables.

Centering involves the transformation of independent variables. Before proceeding into the multilevel analyses, it is customary in MLM to center the participant-level (level-1) predictor variables around their own group means. In multilevel modeling, this type of centering approach is referred to as *group mean centering,* which centers a

level-1 predictor around corresponding level-2 unit means (i.e., group means) "by subtracting the mean of the case's group on the group-mean centered predictor from the case's value on a predictor" (Beretvas, 2009, p.522). This centering approach allows for more meaningful interpretations of the model parameters by retaining within-group variation and removing between-group variation (Raudenbush & Bryk, 2002). Group mean centering has been recommended by statisticians as it "leads to improved parameter estimates as well as more easily interpreted model coefficients" (Reise & Duan, 1999) and "grand-mean centering or no centering may produce confounded point estimates of the mediation effect" (Zhang, Zyphur, & Preacher, 2009). In addition, group mean centering is suggested when estimating the variance of a random coefficients model. In the current study, participant-level (Level 1) predictor variables are centered around their group mean.

Research Questions and MLM Equations

The HLM, version 6, software (Raudenbush & Bryk, 2002) was used to analyze the models; the critical value for these hypotheses was set at $p < .05$. According to Beretvas (2006), three sources of random variability are considered in multilevel modeling analyses: (1) the level one variability, r_{ij}, (2) the level two variability (across groups) in the intercept, u_{0j}, and in the slope, u_{1j}, and (3) the estimate of the level one variability, σ^2 (p. 328). Additional estimates of the Level 2 variance components, τ_{00} and τ_{11} can also be tested for significance using a chi-square test statistic (χ^2) to describe the variability in u_{0j} and u_{1j}, respectively (Beretvas, 2006; Raudenbush & Bryk, 2002).

Multilevel modeling analyses and equation models for each purpose of this investigation are outlined below.

Purpose 1: Predictors of social academic goal orientations.

The first purpose of this investigation was to determine if student-level perceptions of their group's goal orientations significantly predict their Time 2 social acadmeic goal orientations over and above their initial achievement gaol oreintations and initial social academic goal orientations. The second part of this question investigates whether the addition of group-level goal orientaitons contribute to predicting students' Time 2 social academic goal orientations.

Purpose 1 research questions.

1. Do student-level perceptions of their group's goal orientations predict their Time 2 social academic goals in their group context over and above their initial achievement goals in their general course and Time 1 social academic goals? Do group-level goal orientations contribute in predicting students' Time 2 social academic goals?

The investigation of this research question first involved analyses of baseline or *unconditional* models with no predictors at either levels. These baseline models were used to determine whether variance existed in Level 1 (student-level) and Level 2 (group-level) intercepts (Raudenbush & Bryk, 2002). The following data structures existed for the unconditional model: Level 1 (student-level data) and Level 2 (group-level data). These models were run for each outcome variable—three for each social academic goal orientation (mastery, performance-approach, and performance-avoidance). At Level 1, in the unconditional model, the outcome variable for student *i* in

group *j* is modeled only as a function of group *j's* intercept and the student residual. At Level 2, group *j's* intercept is modeled as a function of the average intercept of the outcome across groups and a group residual.

The following equations provide examples of these models.

Unconditional Models: (No predictors at either levels)

Level 1 (Student Level): $Y_{ij} = \beta_{0j} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + u_{0j}$

The meaning of subscripting are provided below:

- Y_{ij} represents the outcome score of student *i* within group *j*.
- β_{0j} represents the predicted outcome score in group *j* when the predictor equals the mean in group *j*.
- r_{ij} is the difference between a student's mean score and the average mean score for that student's group.
- γ_{00} is the predicted *outcome* score for someone at the mean on the *predictor score*.
- u_{0j} is the residual representing how much group *j's* average outcome score deviates from what would be predicted for the group given their outcome score.

If it is inferred that there was not a significant amount of variability in the outcome score between groups ($\chi^2 > p = .05$), then the term, u_{0j}, will be taken out of the equation and the intercept will then be molded as fixed across groups. On the other hand, if it is inferred that there was a significant amount of variability in the intercept across groups ($\chi^2 < p = .05$), then this would support the two-level modeling

of clustering of students' within groups. An additional descriptor of nestedness of the data would be conducted by calculating the intraclass correlation.

Intraclass correlations (ICCs).

For a two-level dataset (in which students reside within one level of grouping), the ICCs are interpreted as the proportion of total outcome variance that is between Level 2 units (Beretvas, 2007). According to Snijders and Bosker (1999, p. 151), "In the most social science research, the intraclass correlation ranges between 0 and .4, and often narrower bounds can be identified." In the unconditional model, each outcome variable is based on the intercept and error terms, with no predictors at either level included. The formula used to calculate the intraclass correlation estimate for the two-level model is provided below:

$$\text{Intraclass Correlation (proportion of variability in outcome variable } \textit{between} \text{ groups)} = \rho_{ICC} = \frac{\tau_{00}}{\tau_{00} + \sigma^2}$$

Based on the *between* and *within* group variability that is found in the ICCs percentages, student- and group-level variables could be added to the model to explain some of the variability, resulting in a series of *conditional models* (i.e., predictors added to one or both levels within the equation models). With the addition of predictors at Level 2, the variance component remaining will be tested again to see if the variability in the intercept (τ_{00}) and slope (τ_{11}) were sufficiently lowered. In addition, the values of the Level 2 variance components for the intercept coefficients

will be compared to the values in the unconditional model to assess the proportion of the variability explained by the group-level predictors that were added to the model.

For the purpose of the first research question, the following student-level predictors could be included at Level 1: three Time 1 achievement goal orientations (mastery, performance-approach, and performance-avoidance), three student-level perceptions of their group goal orientations (mastery, performance-approach, and performance-avoidance), and one equivalent Time 1 social academic goal orientation as a predictor. At Level 2, student's perceptions of their group's goal orientations calculated, as a mean score, to represent group-level goal orientations (mastery, performance-approach, and performance-avoidance) would be included. Parallel to the unconditional models, the conditional models would be run for each outcome variable—three for each social academic goal orientation (mastery, performance-approach, and performance-avoidance).

The following equations provide examples of these models.

Conditional Models: (Predictor variables added at both levels)

Level 1 (Student Level): $Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + \beta_{2j}X_{ij} + \beta_{3j}X_{ij} + \beta_{4j}X_{ij} + \beta_{5j}X_{ij} + \beta_{6j}X_{ij} + \beta_{7j}X_{ij} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + \gamma_{01}W_j + \gamma_{02}W_j + \gamma_{03}W_j + u_{0j}$

$\beta_{1j} = \gamma_{10} + u_{1j}$

The meaning of subscripting are provided below:

- Y_{ij} represents the outcome score of student *i* within group *j*.

- β_{0j} represents the predicted outcome score for someone with a score that is the equivalent of group *j*'s mean on the predictor score.
- r_{ij} is the difference between a student's mean score and the average mean score for that student's group.
- γ_{00} is the predicted *outcome* score for someone at the mean on the *predictor score*.
- γ_{10} is the predicted relationship between Y_{ij} and X_{1j}.
- u_{0j} is the residual representing how much group *j's* average outcome score deviates from what would be predicted for the group given their outcome score.
- u_{1j} models that the relationship between X_{1j} and Y_{ij} varies across groups.
- Estimation of the whether the variance of the u_{0j}s (τ_{00}) provides the measure of whether the variability of groups' intercepts differs from zero.
- Estimation of the variance of the u_{1j}s (τ_{11}) provides the measure of how much the relationship between X_{1j} and Y_{ij} varies across groups.
- W_j represents a group-level variable such as mastery or performance-avoidance group goal orientations.

Purpose 2: The moderating role of group processing.

The second purpose of this investigation was to determine if student's perceptions of their group's effectiveness in working together to accomplish group tasks (calculated as a mean score) significantly moderated the relationship between between student's percpetions of their group's goal orientations and their equivalent social academic goal orientations at Time 2.

Purpose 2 research question.

2. Does group processing moderate the relationship between students' perceptions of their group's goal orientations and their Time 2 social academic goal orientations in their group work?

The student-level predictors that would be included at Level 1 for this question would include: three student-level perceptions of their group goal orientations (mastery, performance-approach, and performance-avoidance) and one equivalent Time 1 social academic goal orientation as a predictor. At Level 2, aggregated mean scores for group-level group processing would be included. As in research question one, the conditional models would be run for each of the three social academic goal orientation outcome variables: mastery, performance-approach, and performance-avoidance social academic goals.

The following equations provide examples of these models.

Conditional Models: (Predictor variables added at both levels)

Level 1 (Student Level): $Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + u_{0j}$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} W_j + u_{1j}$$

- u_{1j} models that the relationship between X_{1j} and Y_{ij} varies across groups.
- Estimation of the variance of the u_{1j}s (τ_{11}) provides the measure of how much the relationship between X_{1j} and Y_{ij} varies across groups.

Purpose 3: Predictors of achievement goal orientations.

The third purpose of this investigation was to determine if students' Time 1 social academic goal orientations significantly predict their subsequent achievement goal orientations at Time 2 in their general course over and above their initial achievement goal orientations in the course. The second part of this question investigates whether the addition of group-level goal orientaitons contribute to predicting students' Time 2 achievement goal orientations.

Purpose 3 research questions.

3. Do students' Time 2 social academic goals predict their subsequent achievement goals in their general course? Do group-level goal orientations contribute in predicting students' Time 2 achievement goals?

The investigation of this research question first involved analyses of baseline or *unconditional* models with no predictors at either levels. These baseline models were used to determine whether variance existed in Level 1 (student-level) and Level 2 (group-level) intercepts (Raudenbush & Bryk, 2002). The following data structures existed for the unconditional model: Level 1 (student level data) and Level 2 (group level data). These models were run for each outcome variable—three for each

achievement goal orientation (mastery, performance-approach, and performance-avoidance). The following equations provide examples of these models.

Unconditional Models: (No predictors at either levels)

Level 1 (Student Level): $Y_{ij} = \beta_{0j} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + u_{0j}$

For the purpose of this research question, the following student-level predictors would be included at Level 1: three Time 2 social academic goal orientations (mastery, performance-approach, and performance-avoidance) and one equivalent Time 1 achievement goal orientation as a predictor. At Level 2, aggregated mean scores for group-level goal orientations (mastery, performance-approach, and performance-avoidance) would also be included. Parallel to the unconditional models, the conditional models would be run for each outcome variable—three for each achievement goal orientation (mastery, performance-approach, and performance-avoidance).

The following equations provide examples of these models.

Conditional Models: (Predictor variables added at both levels)

Level 1 (Student Level): $Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + \beta_{2j}X_{ij} + \beta_{3j}X_{ij} + \beta_{4j}X_{ij} + \beta_{5j}X_{ij} + \beta_{6j}X_{ij} + \beta_{7j}X_{ij} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + \gamma_{01}W_j + \gamma_{02}W_j + \gamma_{03}W_j + u_{0j}$

$\beta_{1j} = \gamma_{10}$

Effect size analyses.

Effect sizes were calculated to determine the practical significance of the findings from multilevel modeling analyses. Unlike OLS regression calculations, which demonstrate the impact of predictor variable outcomes, effect sizes in MLM are different in that the R^2 values represent the amount of variance explained by the addition of predictor variables at different levels of the data hierarchy (Raudenbush & Bryk, 2002). The R^2 used in multilevel modeling represents the proportion of the unconditional models' variance (at each level) explained by the addition of predictor(s) in the conditional model. This provides some useful description of predictors' contribution to the explanation of the outcome of interest.

These coefficients are called, *proportion of variance explained,* and are calculated at Level 1 and Level 2:

$$\text{Proportion of variance explained at Level 1} = \frac{r_{0j}\,(\text{unconditional}) - r_{0j}\,(\text{conditional})}{r_{0j}\,(\text{unconditional})}$$

$$\text{Proportion of variance explained at Level 2} = \frac{T_{0j}\,(\text{unconditional}) - T_{0j}\,(\text{conditional})}{T_{0j}\,(\text{unconditional})}$$

Section 1: Quantitative Results

Descriptive Statistics.

Student-level achievement goal orientation at time 1 and time 2.

As depicted in Table 4 of the descriptive statistics for the student-level variables, there seemed to be notable differences between Time 1 mastery achievement goals (*M*= 6.22), performance-approach goals (*M*= 4.93), and performance-avoidance achievement goals (*M*= 5.12). There seemed to be little difference between students' Time 1 and Time 2 mastery achievement goal orientation (*M* = 6.25). While performance-approach achievement goals decreased at Time 2 (*M* = 4.51) and performance-avoidance achievement goals increased at Time 2 (*M* = 5.36). It is also important to note that mastery achievement goals at both time periods were higher than performance-approach and performance-avoidance achievement goals and had narrower lower to upper bound range variance (4.20 – 7.00), indicating that students tended to retain high mastery achievement goals in their general course across time.

Student-level social academic goal orientation at time 1 and time 2.

Table 4 also showed noticeable differences between Time 1 mastery social academic goals (*M* = 6.23), performance-approach goals (*M* = 3.92), and performance-avoidance social academic goals (*M* = 6.36). Interestingly, mastery and performance-avoidance social academic goals were higher than student performance-approach goals in the group context, with student initial performance-avoidance goals having the highest average. This may indicate that students had higher performance-avoidance goals in their cooperative groups at the beginning of the semester. In addition, unlike achievement

goals, students' mastery social academic goals in their group work decreased at Time 2 (M = 6.08) and there was a notable decrease in performance-avoidance social academic goals at Time 2 (M = 4.59), while performance-approach goals seemed to increase (M = 4.13).

Student-level perceptions of group goal orientations and group processing.

In addition, Table 4 showed notable differences in student perceptions of mastery group goal orientations (M = 6.06), performance-approach group goals (M = 4.81), and performance-avoidance group goals (M = 5.11), with students perceiving higher mastery group goals compared to performance-approach and performance-avoidance group goals, which seems to align with their personal achievement goals and social academic goal orientations at Time 2.

Differences between group-level variables of group goal orientations.

Furthermore, there appeared to be similar patterns of group goal orientation scores calculated as an aggregated mean score of student perceptions of their group's goal orientations and their group consensus scores (see Table 5). For example, group-level means in regards to mastery group goal orientations (Aggregate M = 6.06; Consensus M= 6.31) were higher compared to performance-approach (Aggregate M = 4.79; Consensus M= 4.53) and performance-avoidance group goal orientations (Aggregate M = 5.12; Consensus M= 4.94) across both measurement methods. However, it is also worth noting that group goal orientation scores from the aggregated method appeared to be lower for mastery group goal orientation scores, compared to the group consensus scores, but not lower for performance-approach or performance-avoidance scores. In

order to use the most suitable measures of group-level goal orientations in the current study, one-way ANOVA's were run in SPSS to test the significance in the differences between group-level scores obtained by calculating a mean score of group members' perceptions of their group's goal orientations and group-level scores obtained by group members' consensus by completing the group goal orientation subscale (Context 3) as a group in class (see Table 3, Group Goal Analysis Activity for more information).

Based on the results, there was no significant difference found between the mastery group-level goal orientation mean score and the equivalent group consensus score (F (5, 30) = 2.29, p = .07). There was no significant difference found between the performance-approach group-level goal orientation mean score and the equivalent group consensus score (F (9, 30) = .76, p = .64). There was, however, a significant difference found between the performance-avoidance group goal orientation mean score and the equivalent group consensus score (F (9, 30) = 2.53, p < .05). It is also worth noting that the group-level mean scores were obtained from a larger group sample (n = 31) than the group consensus sample (n = 30). This difference in the sample size was due to the exclusion of one group for which only one student was present during the *Group Goal Analysis Activity,* when all groups completed the Context 3 group goal orientation scale together in class.

Given the mean comparison and correlational findings (see Table 7) between the two methods for obtaining group-level goal orientation scores, I decided to use the group-level mean scores based on students' perceptions of their group's goal orientations and did not include the group consensus scores in the current study. This choice was made for

several important reasons. First and foremost, due to student absenteeism on the day of the Group Goal Analysis activity, the use of the group consensus scores reduced the sample size at both the student- and group-levels, which would lower the statistical power even more. Second, the performance-avoidance group consensus score was significantly higher compared to the calculated mean score, which suggests that social desirability bias among group members may have occurred while completing the Context 3 subscale together in class. Fourth, the use of group-referent measures of individuals' perceptions of an organizational context has been conceptually recommended and used in the educational psychology literature (Blazevski et al., 2005; Bandura, 1997; Goddard, Hoy, W. & Hoy A.; Summers, 2006). Nonetheless, it is advised that readers take caution when interpreting the results from the aggregated group mean scores of this study due to susceptibility in loss of information, reduced statistical power, and appropriateness in modeling interactions between student-level and group-level descriptors (Beretvas, 2007; 2009).

Table 4

Descriptive Statistics for Student-Level Variables

Variable	Time 1			Time 2		
	M	*SD*	Observed Range	*M*	*SD*	Observed Range
Achievement Goals for the course (Time 1 *n* = 88, Time 2 *n* = 90)						
Mastery	6.22	0.69	4.20 – 7.00	6.25	0.67	4.40 – 7.00
Performance-approach	4.93	1.34	1.00 – 7.00	4.51	1.38	1.00 – 7.00
Performance-avoidance	5.12	1.64	1.00 – 7.00	5.36	1.34	1.00 – 7.00
Social Academic Goals in group work (Time 1 and Time 2 *n* = 90)						
Mastery	6.23	0.71	4.25 – 7.00	6.08	0.84	3.75 – 7.00
Performance-approach	3.92	1.30	1.00 – 7.00	4.13	1.32	1.00 – 7.00
Performance-avoidance	6.36	0.73	4.00 – 7.00	4.59	1.16	2.00 – 7.00
Perceived Group Goal Orientations (*n* = 90)						
Mastery				6.07	0.87	3.25 – 7.00
Performance-approach				4.61	1.18	1.00 – 7.00
Performance-avoidance				5.00	1.14	2.00 – 7.00

Notes. The number of students at Levels 1 and 2 were from descriptive statistics of HLM analysis. Descriptions of these variables are provided in Table 2, p. 67.

Table 5

Descriptive Statistics for Group-Level Variables

Variable	*M*	*SD*	Observed Range
Group Goal Orientations Aggregated Mean (*n* = 31)			
Mastery	6.06	0.52	5.00 – 6.89
Performance-approach	4.79	0.70	3.42 – 6.33
Performance-avoidance	5.12	0.70	3.50– 6.50
Group Goal Orientations Group Consensus (*n* = 30)			
Mastery	6.31	0.62	5.00 – 7.00
Performance-approach	4.53	0.92	2.67 – 6.33
Performance-avoidance	4.94	0.98	3.33 – 6.67
Group Processing (calculated as a mean score) (*n* = 31)	6.15	0.53	4.89 – 6.81

Notes. The number of students at Levels 1 and 2 were from descriptive statistics of HLM analysis

Correlational Findings.

Table 6 (p. 106) presents the correlational findings from student- and group-level variables. These associations offer preliminary estimations of the directionality and magnitude of the relationships between the major student-level variables that were later explored in the multilevel modeling analyses.

Relationships between student-level variables and time 2 social academic goal orientations.

There were several significant relationships found between student-level variables and Time 2 social academic goal orientations. First, variables that were positively and significantly related to Time 2 mastery social academic goals included: Time 1 mastery ($r = .48$, $p < .05$) and performance-avoidance ($r = .25$, $p < .05$) social academic goal orientations, and Time 1 mastery achievement goals ($r = .39$, $p < .05$). Unexpectedly, perceived mastery group goal orientation was not significantly correlated with students' Time 2 mastery goals in their group work.

Second, variables that were significantly and positively related to students' Time 2 performance-approach social academic goals included: Time 1 performance-approach social academic goals ($r = .45$, $p < .05$) and Time 1 performance-approach achievement goals ($r = .42$, $p < .05$). In addition, student perceptions of performance-approach group goal orientation ($r = .22$, $p < .05$) had a positive and significant correlation with Time 2 performance-approach social academic goals.

Furthermore, Time 1 performance-approach social academic goals ($r = .41$, $p < .05$), in addition to Time 1 performance-approach ($r = .38$, $p < .05$) and performance-

avoidance achievement goals (r = .25, p < .05) were positively and significantly related to Time 2 performance-avoidance social academic goals. In addition, similar to performance-approach goals, Time 2 performance-avoidance goals were positively and significantly correlated with perceived performance-approach group goal orientation (r = .20, p < .05). Finally, Time 2 performance-approach and performance-avoidance social academic goals were positively and significantly correlated (r = .59, p < .05).

Altogether, these correlational findings suggest that both student Time 1 social academic goals and their Time 1 achievement goals tend to correlate positively with the same type of Time 2 social academic goals in their cooperative group work. In addition, student perceptions of their group's goal orientations also tend to correlate with the same type of Time 2 student social academic goals in their group context.

Relationships between student-level variables and time 2 achievement goal orientations.

When viewing the correlations between student-level variables and Time 2 achievement goal orientations in Table 6, both positive and negative significant correlations were found. First, variables that were significantly and positively related to students' Time 2 mastery achievement goals included: Time 1 mastery achievement goals (r = .56, p < .05), Time 1 mastery social academic goals (r = .46, p < .05), and student perceptions of mastery group goal orientation (r = .22, p < .05). Interestingly, there was a negative correlation between Time 1 performance-avoidance achievement goals (r = -.25, p < .05) and students' Time 2 mastery achievement goals, which suggest that initial

performance-avoidance goals for avoiding failure in the course overall related to lower mastery achievement goals later in the course.

Second, as depicted in Table 6, in regards to students' Time 2 performance-approach achievement goal orientation, there were positive and significant correlations between Time 1 performance-approach achievement goals ($r = .60$, $p < .05$), Time 1 performance-approach social academic goals ($r = .51$, $p < .05$) and Time 1 performance-avoidance social academic goals ($r = .58$, $p < .05$). There was also a positive correlation between student perceptions of performance-avoidance group goal orientation ($r = .55$, $p < .05$) and Time 2 performance-approach achievement goals.

Third, the variables that were significantly related to Time 2 performance-avoidance achievement goals included: Time 1 performance-approach ($r = .33$, $p < .05$) and performance-avoidance achievement goals ($r = .52$, $p < .05$), in addition to Time 1 performance-approach ($r = .28$, $p < .05$) and performance-avoidance ($r = .21$, $p < .05$) social academic goals. Interestingly, there were low, but significant correlation between student perceptions of performance-approach group goal orientation ($r = .18$, $p < .05$) with Time 2 performance-avoidance achievement goals. Finally, it was important to note that there was a strong, positive correlation between student perceptions of performance-avoidance and performance-approach group goal orientations ($r = .88$, $p < .05$). This significantly high correlation might result in multicollinearity issues in the multilevel modeling analyses.

Similar to the correlational results discussed in regards to Time 2 social academic goal orientations, these associations suggest that student Time 1 achievement goal

orientation and Time 2 social academic goals tend to correlate positively with the same type of Time 2 achievement goals in their course, with the exception of the negative correlation between Time 1 performance-avoidance achievement goals and Time 2 mastery achievement goals. In addition, the correlations between performance-approach and performance-avoidance goal orientations across all student-level variables were comparable and consistently interrelated, which magnify the underlying relationships between the two constructs.

Relationships between group-level variables.

As shown in Table 7, there were strong correlations between performance-approach and performance-avoidance group goal orientations using both methods of measuring group variables (GG_mean $r = .89$, $p < .05$ and GG_consensus $r = .89$, $p < .05$). However, these goal orientations were not significantly related to mastery group goal orientations, which did not align with previous research that found low correlations between mastery and performance-approach ($r = .33$) and performance-avoidance ($r = .32$) (Kim et al., in press). In the current investigation, it was expected that performance-oriented group goals would have no significant correlation with mastery group goal orientation. On the other hand, it is important to note that the strength of the relationship between the two performance-oriented group goal orientations may result in multicollinearity issues, which will be discussed further in the multilevel modeling results section. Furthermore, there were positive and significant correlations between mastery group goals and group processing for both methods (GG_mean $r = .62$, $p < .05$ and GG_consensus $r = .39$, $p < .05$). These findings indicate that groups with high mastery

group goal orientation tend to perceive that they are working effectively in cooperatively completing group activities. The next section of this chapter will explore these associations further through multilevel modeling analyses.

Table 6

Correlations between Student-Level Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Time 1 Social Academic Goals															
1. Mastery Sag1	1														
2. Performance-approach Sag1	.09	1													
3. Performance-avoid Sag1	**.43**	**.28**	1												
Time 2 Social Academic Goals															
4. Mastery Sag	**.48**	.04	**.25**	1											
5. Performance-approach Sag	-.04	**.45**	.13	-.02	1										
6. Performance-avoid Sag	.02	**.41**	.11	.00	**.59**	1									
Time 1 Achievement Goals															
7. Mastery Ago1	**.58**	.04	**.29**	**.39**	-.12	-.12	1								
8. Performance-approach Ago1	.10	**.54**	**.24**	.10	**.42**	**.38**	.05	1							
9. Performance-avoid Ago1	-.04	**.23**	.16	-.17	.00	**.25**	-.17	.12	1						
Time 2 Achievement Goals															
10. Mastery Ago2	**.46**	.01	.16	**.61**	-.10	-.01	**.56**	.02	**-.25**	1					
11. Performance-approach Ago2	-.11	**.51**	.15	-.02	**.66**	**.58**	-.16	**.60**	.18	-.12	1				
12. Performance-avoidance Ago2	-.03	**.28**	**.21**	-.02	**.28**	**.51**	-.14	**.33**	**.52**	.01	**.55**	1			
Student Perceptions of Group Goals															
13. Mastery Gg	**.30**	.08	-.14	.07	-.02	-.02	**.20**	-.03	-.12	**.22**	-.12	-.18	1		
14. Performance-approach Gg	.13	**.21**	.07	.07	**.22**	**.20**	.00	.11	.10	.14	**.20**	**.18**	**.23**	1	
15. Performance-avoidance Gg	.10	**.22**	.15	.06	.14	.15	.02	.16	.04	.18	.14	.19	.19	**.88**	1

Note. Bolded values are significant correlations at $p < .05$.
Sag(time)= Social academic goal orientations
Ago(time)= Achievement goal orientations
Gg= Student perceptions of group goal orientations

Table 7

Correlations between Group-Level Variables

Variable	1	2	3	4	5	6	7
Group Goal Orientations (Aggregated Mean Score)							
1. Mastery GG_mean	1						
2. Performance-approach GG_mean	.21	1					
3. Performance-avoid GG_mean	.11	**.89**	1				
Group Goal Orientations (Consensus Score)							
4. Mastery GG_consensus	.31	-.21	-.30	1			
5. Performance-approach GG_consensus	**.38**	.23	.07	-.10	1		
6. Performance-avoid GG_consensus	.28	.28	.13	-.22	**.89**	1	
Group Processing GP	**.62**	.10	.14	**.39**	.14	.06	1

Note. Bolded values are significant correlations at $p < .05$.
GG_mean= individual perceptions of group goal orientations calculated as a mean score.
GG_consensus= scores obtained from the *Group Goal Analysis* in-class activity in which groups completed the Context 3-group goal orientation scale together.

Multilevel modeling results.

The analyses in this section address the three purposes of the quantitative investigation: (1) predictors of students' social academic goal orientations in their group context, (2) the moderating role of group processing, and (3) predictors of students' achievement goal orientations in their general course. Although the correlational findings provide a look at preliminary associations between the predictor and outcome variables mentioned above, correlational analyses does not account for the nested structure of the data (e.g., students nested within groups). Given that most of what goes on in education occurs within some type of group context, nested data are very common in social science research and occur whenever students are clustered in groups (Beretvas, 2009, p. 505; also see Burstein, 1980). In regards to this study, the goal orientations of students clustered together in cooperative groups will depend to some extent on the group dynamics resulting in a within-group dependency. In such cases, the statistical technique of *multilevel modeling* is recommended (Raudenbush & Bryk, 2002). The analyses for the following research questions used the HLM software, version 6, for multilevel modeling (Raudenbush & Bryk, 2002). The next section describes how multilevel modeling was used to determine predictors of students' social academic goal orientations.

Results for purpose 1:Predictors of social academic goals.

Unconditional multilevel modeling analyses for purpose 1 & 2.

The purpose of analyses 1 and 2 were: (1) to determine if students' initial (Time 1) achievement goal orientations and student-level perceptions of their groups' goal orientations (Level 1) predicted the social academic goal orientations that students adopted in their group work at Time 2, and (2) to examine if group processing moderates the relationship between students' perceptions of group goal orientations and their Time 2 social academic goal orientations. The investigation of these questions involved analyzing a series of two-level models for each Time 2 social academic goal orientation (mastery, performance-approach, and performance-avoidance). A series of two-level unconditional models with no predictors at either level was analyzed first, followed by calculations of intraclass correlations.

According to the χ^2 test results, the mean scores on the all social academic goal orientation subscales did not significantly vary across groups (see Table 8). This implies that group membership did not account for a significant proportion of variance in students' social academic goal orientations in their group context. The intraclass correlation coefficients (ICCs, see Table 9), which represents the percentage of variance in dependent variables due to the influence of Level 2 units, demonstrated that approximately 9% of the variability in mastery and performance-avoidance social academic scores could be attributed to group-level factors. That is, 91% of the variability in students' mastery social academic goal orientation scores and performance-avoidance social academic goal orientation scores was due to student-level factors. Interestingly, no

variability was found for performance-approach social academic goals at Level 2, thus the analyses for this outcome variable does not include group-level variables. The overall reliability of the mean scores (λ) estimates was fairly low: mastery (λ = 0.23), performance-avoidance (λ = 0.23), and performance-approach (λ = .01). While these results indicate that there is limited variance at Level 2, all analyses were run in HLM due to the nested structure of the data.

Table 8

Unconditional Model Results for Purpose 1: Social Academic Goal Orientations

Fixed Effects (n =)	*Coefficient*	*SE*	*t(df)*	*p Value*
Average mean score (γ_{00})				
Mastery	6.08	0.09	63.49(29)	.000
Performance-approach	4.12	0.13	29.68(29)	.000
Performance-avoidance	4.58	0.13	33.35(29)	.000
Random Effects	*Variance Component*	*df*	χ^2	*p Value*
Group mean score (u_{0j})				
Mastery	0.06	29	37.5	0.133
Performance-approach	0.00	29	27.3	>.500
Performance-avoidance	0.12	29	37.72	0.129
Level 1 effect (r_{ij})				
Mastery	0.63			
Performance-approach	1.73			
Performance-avoidance	1.23			

Table 9

Intraclass Correlations (ICCs) (Percentages) Derived from Unconditional Models for Social Academic Goal Orientations

Dependent Variables	Time 2
Social Academic Goal Orientations	
Mastery	8.93
Performance-approach	0.00
Performance-avoidance	9.11

Conditional multilevel modeling analyses for purpose 1.

Based on the intraclass correlation coefficients derived from the unconditional models for social academic goal orientations, there were minimal differences detected between groups for all social academic goals. Nonetheless, the conditional multilevel modeling analyses were conducted to investigate both student-and group-level predictors of students' social academic goal orientations in their cooperative group work. Seven student-level variables were added as factors into the Level 1 equation that could potentially predict students' Time 2 social academic goal orientations (Go_Sag2):

- Time 1 achievement goal orientations: mastery (Mas_Ago1), performance-approach (Pap_Ago1), and performance-avoidance (Pav_Ago1),
- Student perceptions of their group's goal orientations: mastery (Mas_Gg), performance-approach (Pap_Gg), and performance-avoidance (Pav_Gg), and

- Time 1 social academic goal orientation as a predictor: mastery, performance-approach, or performance-avoidance (Go_Sag1).

In addition, the three group-level variables were added as factors into the Level 2 equation that could potentially predict students' Time 2 social academic goals:

- Group Goal Orientations (calculated as mean scores): mastery (Mas_GG), performance-approach (Pap_GG), and performance-avoidance (Pav_GG).

The following example equations were used to examine the student-level (Level 1) and group-level (Level 2) predictors, as presented above, on students' social academic goal orientations.

Conditional Model: (Predictors added at both levels)

Level 1: $\text{Go\_Sag2} = \beta_{0j} + \beta_{1j}(\text{Mas\_Ago1})_{ij} + \beta_{2j}(\text{Pap\_Ago1})_{ij} + \beta_{3j}(\text{Pav\_Ago1})_{ij} + \beta_{4j}(\text{Go\_Sag1})_{ij} + \beta_{5j}(\text{Mas\_Gg})_{ij} + \beta_{6j}(\text{Pap\_Gg})_{ij} + \beta_{7j}(\text{Pav\_Gg})_{ij} + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Mas\_GG})_j + \gamma_{02}(\text{Pap\_GG})j + \gamma_{03}(\text{Pav\_GG})_j + u_{0j}$

$\beta_{1j} = \gamma_{50} + u_{5j}$

Mastery social academic goal orientation.

As seen in Table 10, the parameter estimate of Time 2 mastery social academic goal orientation significantly differed from zero (γ_{00} = 6.06, $t(26) = 70.96$, $p < .0001$). Of the student-level variables, students' Time 1 mastery social academic goals significantly and positively predicted students' Time 2 mastery social academic goals (γ_{40} = .61, $t(29) = 3.51$, $p = .001$). This means that student' initial mastery social academic goal orientations significantly predicted their mid-semester mastery social academic goals in their group work. As hypothesized, the group-level results suggested that mastery group goal orientation significantly and positively contributed to predicting students' Time 2 mastery social academic goal orientation (γ_{01} = .60, $t(26) = 3.49$, $p < .01$). The Level 1 variance explained by this model was found to reduce the Level 1 variance estimate (σ^2) from a value of 0.63 in the unconditional model to a value of 0.47 in the current conditional model. Specifically, the proportion of the Level 1 variance explained in the model was: (0.63 – 0.47)/0.63) = 0.2539 or 25.39%. In terms of the variability in the outcome variable between groups, the Level 2 variance explained by this model found to reduce the Level 2 variance estimate (u_{0j}) from a value of 0.06 to 0.05. Particularly, the proportion of variance explained in the model was: (0.06 – 0.05/0.06) = .1666 or 16.67%. There was not a significant amount of variability remaining in the intercept (τ_{00} = .05, χ^2 (25) = 32.19, $p = .152$) or the slope (τ_{11} = .00, χ^2 (28) = 24.16, $p > .500$) across groups.

Table 10

Conditional Model for Student- and Group-Level Variables Predicting Time 2 Mastery Social Academic Goal Orientation

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	6.06	0.08	70.96(26)	0.000
Mas_GG (γ_{01})	0.60	0.17	3.49(26)	0.002
Pap_GG (γ_{02})	0.01	0.28	0.06(26)	0.948
Pav_GG (γ_{03})	0.03	0.28	0.11(26)	0.909
Mas_Ago1 (γ_{10})	-0.04	0.18	-0.24(77)	0.804
Pap_Ago1 (γ_{20})	0.03	0.07	0.48(77)	0.628
Pav_Ago1 (γ_{30})	-0.09	0.06	-1.49(77)	0.140
Mas_Sag1 (γ_{40})	0.61	0.17	3.51(29)	0.001
Mas_Gg (γ_{50})	-0.16	0.12	-1.34(77)	0.190
Pap_Gg (γ_{60})	0.36	0.18	1.99(77)	0.050
Pav_Gg (γ_{70})	-0.31	0.18	-1.71(77)	0.089
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.05	25	32.19	0.152
Mas_Gg (γ_{50})	0.00	28	24.16	>.500
Level 1 effect (r_{ij})	0.47			

Mas_Ago1 = Time 1 mastery achievement goals in general course
Pap_Ago1 = Time 1 performance-approach achievement goals in general course
Pav_Ago1 = Time 2 performance-avoidance achievement goals in general course
Mas_Sag1 = Time 1 mastery social academic goals in group context
Mas_Gg = Student-level perceptions of mastery group goal orientation
Pap_Gg = Student-level perceptions of performance-approach group goal orientation
Pav_Gg = Student-level perceptions of performance-avoidance group goal orientation
Mas_GG = Group-level mastery goal orientation (calculated mean score)
Pap_GG = Group-level performance-approach goal orientation (calculated mean score)
Pav_GG = Group-level performance-avoidance goal orientation (calculated mean score)

Performance-approach social academic goal orientation.

Due to the minimal differences detected between groups in the intraclass correlation coefficient derived from the unconditional model for performance-approach social academic goal orientation, there was not enough variance at Level 2 to justify adding group-level variables. Thus, there were no Level 2 factors included in the analyses for the performance-approach social academic goal orientation outcome variable. As shown in Table 11, the parameter estimate of Time 2 performance-approach social academic goal orientation significantly differed from zero (γ_{00} = 4.11, $t(29) = 30.31$, $p <$ .0001). Of the seven student-level variables, significant and positive predictors of students' Time 2 social academic goals were students' Time 1 performance-approach social academic goals (γ_{40} = .36, $t(80) = 2.36$, $p < .05$) and individual perceptions of their group's performance-approach goals (γ_{60} = .96, $t(80) = 2.95$, $p < .01$). These results indicated that in addition to students' initial performance-approach social academic goals, when students perceived their group to be focused on outperforming other groups, they were more likely to adopt performance-approach goals within their own group context. This group-level factor was a strong predictor and would result in students wanting to outperform their own group members. Interestingly, student's individual perceptions of performance-avoidance group goal orientation negatively predicted their Time 2 performance-approach social academic goals (γ_{70} = -.85, $t(80) = -2.69$, $p < .01$). This means that the higher a student perceives the group to be performance-avoidant, in which they view their group as wanting to avoid doing poorly compared to other groups, the less likely the student is to adopt performance-approach social academic goals for group

work. The Level 1 variance explained by this model was found to reduce the Level 1 variance estimate (σ^2) from a value of 1.73 in the unconditional model to a value of 1.43 in the current conditional model. Specifically, the proportion of the Level 1 variance explained by the model was: (1.73 – 1.43)/1.73) = 0.1734 or 17.34%. As expected, there was not a significant amount of variability remaining in the intercept between groups (τ_{00} = .06, χ^2 (29) = 32.46.

Table 11

Conditional Model for Student-Level Variables Predicting Time 2 Performance-Approach Social Academic Goal Orientation

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	4.11	0.13	30.31(29)	0.000
Mas_Ago1 (γ_{10})	-0.04	0.24	-0.17(80)	0.862
Pap_Ago1 (γ_{20})	0.27	0.14	1.91(80)	0.058
Pav_Ago1 (γ_{30})	-0.15	0.10	-1.41(80)	0.160
Pap_Sag1 (γ_{40})	0.36	0.15	2.36(80)	0.020
Mas_Gg (γ_{50})	-0.05	0.21	-0.21(80)	0.789
Pap_Gg (γ_{60})	0.96	0.32	2.95(80)	0.005
Pav_Gg (γ_{70})	-0.85	0.31	-2.69(80)	0.009
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.06	29	32.46	0.300
Level 1 effect (r_{ij})	1.43			

Mas_Ago1 = Time 1 mastery achievement goals in general course
Pap_Ago1 = Time 1 performance-approach achievement goals in general course
Pav_Ago1 = Time 2 performance-avoidance achievement goals in general course
Pap_Sag1 = Time 1 performance-approach social academic goals in group context
Mas_Gg = Student-level perceptions of mastery group goal orientation
Pap_Gg = Student-level perceptions of performance-approach group goal orientation
Pav_Gg = Student-level perceptions of performance-avoidance group goal orientation

Performance-avoidance social academic goal orientation.

As displayed in Table 12, the parameter estimate of Time 2 performance-avoidance social academic goal orientation significantly differed from zero (γ_{00} = 4.56, $t(26) = 35.25$, $p < .0001$). Of the seven student-level variables, students' Time 1 achievement performance-approach goal orientations (γ_{20} = .35, $t(77) = 3.84$, $p < .01$) and their perceptions of performance-approach group goal orientation (γ_{60} = .57, $t(77) = 2.18$, $p < .05$) were significant and positive predictors of students' Time 2 performance-avoidance social academic goals. These results indicate that in addition to students' initial performance-approach achievement goals in their general course, when students perceive their group to be performance-approach oriented, in which they are focused on outperforming other groups, those students are more likely to adopt performance-avoidance social academic goals in their group. The Level 1 variance estimate (σ^2) from a value of 1.23 in the unconditional model was reduced to a value of 0.87 by the inclusion of the set of predictors added in the current conditional model. Specifically, the proportion of the Level 1 variance explained in the model was: (1.23 – 0.87)/1.23) = 0.2926 or 29.26%. In terms of the variability in the outcome variable between groups, the Level 2 variance explained by this model actually increased the Level 2 variance estimate (u_{0j}) from a value of 0.12 to 0.20. Thus, the proportion of variance explained in the model was: (0.12 – 0.20/0.12) = -.6666 or -66.66%, resulting in a negative R^2. Methodologists (Hox, 2002; Roberts & Monaco, 2006; Snijders & Bosker, 1999) have cautioned against putting too much emphasis on using these R^2's as descriptors of the predictors' influence on the outcome. The reason for their caution is that it is possible to encounter negative

values for this kind of R^2 even when a predictor or predictors are contributing to the prediction of the outcome. Based on Roberts and Monaco (2006), this can happen when level two predictor(s) are added to a model in which the outcome does not vary much at one of the levels in the model. In this particular dataset, a negative R^2 was observed for the *Pav_Sag2* outcome. The amount of variance at level two (among groups) was not substantial and this likely explains why the negative R^2 was encountered. According to Roberts and Monaco (2006), a negative R^2 does not imply that the coefficients and their statistical tests are incorrect. It is also worth noting that there was still a significant amount of variability remaining in the intercept ($\tau_{00} = .20$, χ^2 (23) = 37.47, $p = .029$), but not in the slope ($\tau_{11} = .07$, χ^2 (26) = 29.85, $p = .273$) across groups.

Table 12

Conditional Model for Student- and Group-Level Variables Predicting Time 2 Performance-Avoidance Social Academic Goal Orientation

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	4.56	0.12	35.25(26)	0.000
Mas_GG (γ_{01})	-0.28	0.25	-1.09(26)	0.283
Pap_GG (γ_{02})	0.62	0.42	1.47(26)	0.153
Pav_GG (γ_{03})	-0.07	0.42	-0.16(26)	0.868
Mas_Ago1 (γ_{10})	0.01	0.22	0.05(77)	0.954
Pap_Ago1 (γ_{20})	0.35	0.11	3.17(77)	0.003
Pav_Ago1 (γ_{30})	0.09	0.08	1.04(77)	0.298
Pav_Sag1 (γ_{40})	-0.03	0.21	0.17(77)	0.863
Mas_Gg (γ_{50})	0.19	0.18	1.05(77)	0.296
Pap_Gg (γ_{60})	0.57	0.26	2.18(77)	0.032
Pav_Gg (γ_{70})	-0.42	0.26	-1.58(29)	0.123
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.20	23	37.47	0.029
Pav_Gg (γ_{70})	0.07	26	29.85	0.273
Level 1 effect (r_{ij})	0.87			

Mas_Ago1 = Time 1 mastery achievement goals in general course
Pap_Ago1 = Time 1 performance-approach achievement goals in general course
Pav_Ago1 = Time 1 performance-avoidance achievement goals in general course
Pav_Sag1 = Time 1 performance-avoidance social academic goals in group context
Mas_Gg = Student individual perceptions of mastery group goal orientation
Pap_Gg = Student individual perceptions of performance-approach group goal orientation
Pav_Gg = Student individual perceptions of performance-avoidance group goal orientation
Mas_GG = mastery group goal orientation (calculated as a mean score)
Pap_GG = performance-approach group goal orientation (calculated as a mean score)
Pav_GG = performance-avoidance group goal orientation (calculated as a mean score)

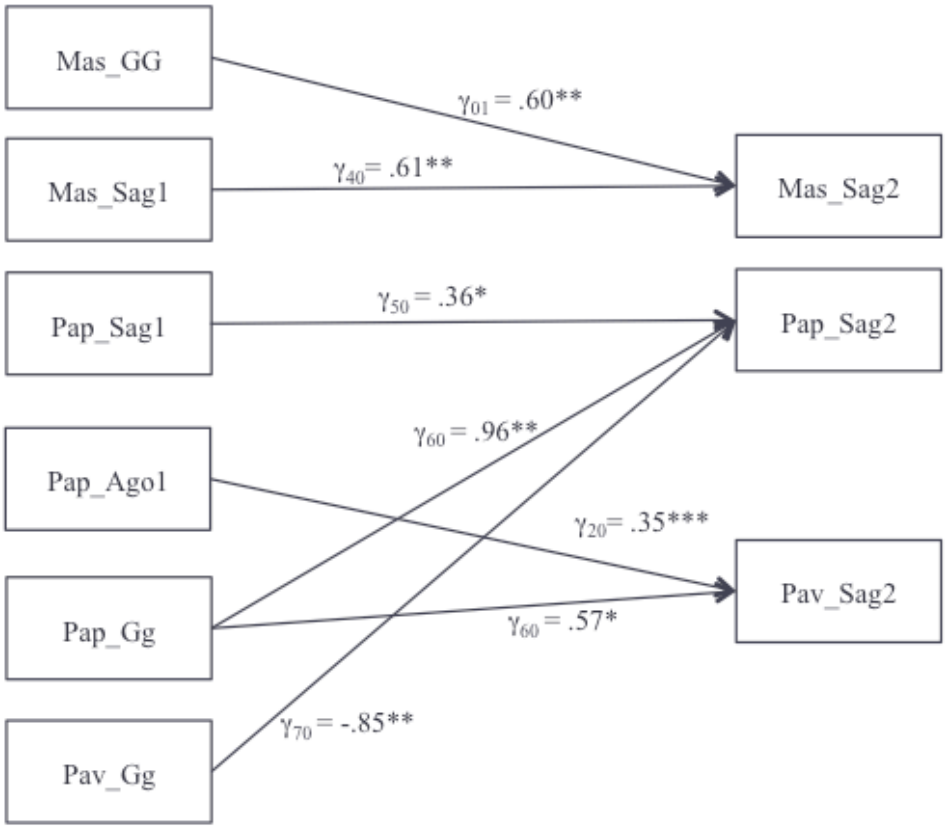
Summary of purpose 1 results.

As shown in Figure 3, these results suggest that both student- and group-level variables significantly predicted students' Time 2 social academic goal orientations in their group context. Specifically, both students' Time 1 mastery social academic goals (γ_{40} = .61, $t(29) = 3.51$, $p = .001$) and group-level mastery goal orientation (γ_{01} = .60, $t(26) = 3.49$, $p < .01$) significantly and positively predicted students' Time 2 mastery social academic goal orientation in their group work. This suggests that in addition to students' initial mastery social academic goals in the beginning of group work, shared group-level mastery goal orientations significantly contributed to predicting student mastery social academic goals later in their group work. In addition, students' Time 1 performance-approach social academic goals (γ_{40} = .36, $t(80) = 2.36$, $p < .05$) and individual perceptions of their group's performance-approach goals (γ_{60} = .96, $t(80) = 2.95$, $p < .01$) were significant and positive predictors of students' Time 2 performance-approach social academic goals. These results indicated that when students acquire initial performance-approach goals in their group context and perceive their group to be performance-approach oriented, they are more likely to endorse performance-approach goals within their group context later in the semester. Interestingly, student perceptions of performance-avoidance group goal orientation strongly and negatively (γ_{70} = -.85, $t(80) = -2.69$, $p < .01$) predicted students' Time 2 performance-approach social academic goal orientation, which indicates that the higher a student perceives their group to be performance-avoidance, in which they view their group as wanting to avoid doing poorly in front of other groups, they are less likely to adopt performance-approach social

academic goals within their group context. Furthermore, students' Time 1 achievement performance-approach goal orientations (γ_{20} = .35, $t(77) = 3.84$, $p < .01$) and their perceptions of performance-approach group goal orientation (γ_{60} = .57, $t(77) = 2.18$, $p < .05$) were significant and positive predictors of students' Time 2 performance-avoidance social academic goals. This suggests that in addition to students' initial achievement goals for outperforming others in their general course, student's perceptions of their group's performance-approach goals, in which they view their group as wanting to outperform other groups, tend to acquire higher performance-approach and performance-avoidance goals in their group context.

Figure 3

Purpose 1 results



Mas_Sag2 = Time 2 mastery social academic goals in the group context
Pap_Sag2 = Time 2 performance-approach social academic goals in the group context
Pav_Sag2 = Time 2 performance-avoidance social academic goals in the group context
Mas_GG = mastery group goal orientation (calculated as a mean score)
Mas_Sag1 = Time 1 mastery social academic goals in group context
Pap_Sag1 = Time 1 performance-approach social academic goals in group context
Pap_Ago1 = Time 1 performance-approach achievement goals in general course
Pap_Gg = Student individual perceptions of performance-approach group goal orientation
Pav_Gg = Student individual perceptions of performance-avoidance group goal orientation

Results for purpose 2: The moderating role of group processing.

Because it was hypothesized that group processing would moderate the relationship between students' individual perceptions of their group's goal orientations and the social academic goal orientations that they adopted later in their group context, the significant relationships that were found in purpose one of this investigation were further inspected in the analyses for purpose two. Based on the results from research question one, significant relationships were found between students' perceptions of performance-approach group goal orientation and Time 2 performance-avoidance and performance-approach social academic goal orientations and students' perceptions of performance-avoidance group goal orientation and Time 2 performance-approach social academic goal orientation. However, performance-approach social academic goal orientation could not be examined as an outcome variable due to the minimal differences detected between groups in the intraclass correlation coefficient. Thus, only the relationship between students' perceptions of performance-approach group goal orientation and students' Time 2 performance-avoidance goal orientation will be investigated for this research question, despite the lack of significance found in the variability in the slopes (τ_{11}) estimation across groups. An example of the multilevel modeling equations is presented below as students' perceptions of performance-approach group goal orientation (Pap_Gg) as a predictor at Level 1 and group processing (GP) as a moderator at Level 2 in predicting students' performance-avoidance social academic goal orientation at Time 2 (Pav_Sag2).

Conditional Model: (Predictors added at both levels)

Level 1: $\text{Pav\_Sag2} = \beta_{0j} + \beta_{1j}(\text{Pap\_Gg})_{ij} + r_{ij}$

Level 2 (Group Level): $\beta_{0j} = \gamma_{00} + u_{0j}$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(GP)_j + u_{1j}$$

Conditional multilevel modeling results for purpose 2.

The results depicted in Table 13 show that group processing did not significantly moderate the relationship between perceived performance-approach group goal orientation and students' Time 2 performance-avoidance social academic goal orientation (GP (γ_{11}) = .05, p = .850). Investigation of random effects output revealed that the variance increased at Level 1 (from .87 to .94) and the variance in the intercept increased from .20 to .22. In addition, there was still a significant amount of variance at the Level 2 intercept (τ_{00} = .22, χ^2 (29) = 49.45, p = .01) and slope (τ_{11} = .26, χ^2 (28) = 47.90, $p <$ .05).

These results did not support the moderating role of group processing. This may suggest that group processing has limited influence on the extent to which students' perceptions of their group's goal orientations influence the goal orientations that they adopt in their group work. Perhaps perceptions of their group's effectiveness in working cooperative together would be a more meaningful predictor at the student-level (Level 1). This yields opportunities for future research to investigate similar or other potential group characteristics that may significantly influence this relationship. In addition, it is expected that the qualitative interviews will provide a better explanation of the current findings by

comparing groups with distinct levels of group processing on students' personal goals in their cooperative group work and perceptions of their group's goals.

Table 13

Conditional Model for Group Processing as a Moderator

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	4.58	0.13	34.35(29)	0.000
Pap_Gg (γ_{10})	0.10	0.16	0.62(28)	0.534
GP (γ_{11})	0.05	0.30	0.19(28)	0.850
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.22	29	49.45	0.010
Pap_Gg (u_{1j})	0.26	28	47.90	0.011
Level 1 effect (r_{ij})	0.94			

Pap_Gg = Student individual perceptions of performance-approach group goal orientation
GP = Group Processing (calculated as a mean score)

Results for purpose 3: Predictors of achievement goals.

Unconditional multilevel modeling analyses for purpose 3.

The purpose of analysis three was to determine if students' Time 2 social academic goal orientations and group-level goal orientations predicted students' Time 2 achievement goal orientations in their general course. The investigation of these questions first involved analyzing a series of two-level unconditional models for each Time 2 achievement goal orientation (mastery, performance-approach, and performance-avoidance) with no predictors at either level, followed by calculations of intraclass correlations.

According to the χ^2 test results, the mean scores on the mastery and performance-avoidance achievement goal orientation subscales did significantly vary across groups (see Table 14). This implies that group membership did account for a significant proportion of variance in students' mastery and performance-avoidance achievement goal orientations in their general course at Time 2. On the other hand, mean scores on performance-approach achievement goal orientation subscales did not significantly vary across groups. The intraclass correlation coefficients (ICCs), which represents the percentage of variance in dependent variables due to the influence of Level 2 units, demonstrated that approximately 27% of the variability in mastery and 27% of the variability in performance-avoidance achievement goal scores can be attributed to group-level factors (Table 15). This also means that 73% of the variability in students' mastery and performance-avoidance achievement goal orientation scores was due to student-level factors. No variability was found for performance-approach social academic goals at

Level 2, thus the analyses for this outcome variable does not include group-level variables. The overall reliability of the mean scores (λ) estimates was moderate, with the exception of performance-approach goals: mastery (λ = 0.53), performance-avoidance (λ = 0.53), and performance-approach (λ = .00). While these results indicate that there is limited variance at Level 2 for performance-approach goal orientation, all analyses were run in HLM due to the nested structure of the data.

Table 14

Unconditional Model Results for Purpose 3: Achievement Goal Orientations

Fixed Effects (n =)	*Coefficient*	*SE*	*t(df)*	*p Value*
Average mean score (γ_{00})				
Mastery	6.25	0.08	70.39(29)	.000
Performance-approach	4.50	0.14	30.87(29)	.000
Performance-avoidance	5.35	0.17	30.37(29)	.000
Random Effects	*Variance Component*	*df*	χ^2	*p Value*
Group mean score (u_{0j})				
Mastery	0.12	29	61.95	.001
Performance-approach	0.00	29	22.53	>.500
Performance-avoidance	0.49	29	61.22	.001
Level 1 effect (r_{ij})				
Mastery	0.33			
Performance-approach	1.91			
Performance-avoidance	1.32			

Table 15

Intraclass Correlations (ICCs) (Percentages) Derived from Unconditional Models for Achievement Goal Orientations

Dependent Variables	Time 2
Achievement Goal Orientations	
Mastery	26.67
Performance-approach	.00
Performance-avoidance	27.0

Conditional multilevel modeling analyses for purpose 3.

Based on the intraclass correlation coefficients derived from the unconditional models for students' Time 2 achievement goal orientations, there were significant differences found between groups for mastery and performance-avoidance achievement goals. Therefore, the conditional multilevel modeling analyses were conducted to investigate whether student- (Level 1) and group-level (Level 2) variables significantly predicted students' achievement goal orientations in their general course. Four student-level variables were included as factors in the Level 1 equation that could potentially predict students' Time 2 achievement goal orientations (Go_Ago2):

- Time 1 social academic orientations: mastery (Mas_Sag1), performance-approach (Pap_Sag1), and performance-avoidance (Pav_Sag1).
- Time 1 achievement goal orientation as a predictor: mastery, performance-approach, or performance-avoidance (Go_Ago1).

In addition, three group-level factors were added at Level 2 that could potentially contribute in predicting students' Time 2 mastery and performance-avoidance achievement goal orientations:

- Group-level Goal Orientations (calculated as a mean score): mastery (Mas_GG), performance-approach (Pap_GG), and performance-avoidance (Pav_GG).

The following are the example equations used to examine student-level and group-level factors in predicting students' achievement goal orientations.

Conditional Model: (Predictors added at both levels)

Level 1: $\text{Go\_Ago2} = \beta_{0j} + \beta_{1j}(\text{Mas\_Sag1})_{ij} + \beta_{2j}(\text{Pap\_Sag1})_{ij} + \beta_{3j}(\text{Pav\_Sag1})_{ij} + \beta_{4j}(\text{Go\_Ago1})_{ij} + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Mas\_GG})_j + \gamma_{02}(\text{Pap\_GG})j + \gamma_{03}(\text{Pav\_GG})_j + u_{0j}$

$\beta_{1j} = \gamma_{10}$

Mastery achievement goal orientation.

As seen in Table 16, the parameter estimate of Time 2 mastery achievement goal orientation significantly differed from zero (γ_{00} = 6.25, $t(26) = 71.38$, $p < .0001$). Of the seven student- and group-level variables, students' Time 1 mastery social academic goal orientation (γ_{20} = .36, $t(80) = 2.87$, $p = .006$) and group-level mastery goal orientation (γ_{01} = .37, $t(26) = 2.13$, $p < .05$) were significant predictors of students' Time 2 mastery achievement goals. This means that the higher a student has initial mastery social academic goals in their group work during the beginning of the semester, the more likely they will have subsequent mastery achievement goals in their general course. In addition, the more a student's group endorses mastery goal orientation for developing competence in cooperative group work, the more a student will pursue mastery-oriented achievement goals in their course in general. The Level 1 variance explained by this model was found to reduce the Level 1 variance estimate (σ^2) from a value of 0.33 in the unconditional model to a value of 0.15 in the current conditional model. Specifically, the proportion of the Level 1 variance explained in the model was: (0.33 – 0.21)/0.33) = 0.3636 or 36.36%. In terms of the variability in the outcome variable between groups, the Level 2 variance explained by this model found to increase the Level 2 variance estimate (u_{0j}) from a value of 0.12 to 0.15. Thus, the proportion of variance explained in the model was: (0.12 – 0.15/0.12) = -.25 or -25%, resulting in a negative R^2. Based on Roberts and Monaco (2006), this can happen when level two predictor(s) are added to a model in which the outcome does not vary much at one of the levels in the model. In this particular dataset, a negative R^2 was observed for the *Mas_Ago2* outcome. The amount of variance at level

two (among groups) was not substantial and this likely explains why the negative R^2 was encountered. A significant amount of variability still remained in the intercept (τ_{00} = .15, χ^2 (26) = 79.26, p = .000).

Table 16

Conditional Model for Student- and Group-Level Variables Predicting Time 2 Mastery Achievement Goal Orientation

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	6.25	0.08	71.38(26)	0.000
Mas_GG (γ_{01})	0.37	0.17	2.13(26)	0.042
Pap_GG (γ_{02})	-0.00	0.29	-0.00(26)	0.994
Pav_GG (γ_{03})	-0.02	0.28	-0.77(26)	0.939
Mas_Ago1 (γ_{10})	0.21	0.12	1.76(80)	0.081
Mas_Sag1 (γ_{20})	0.36	0.12	2.87(80)	0.006
Pap_Sag1 (γ_{30})	-0.02	0.05	-0.40(80)	0.689
Pav_Sag1 (γ_{40})	0.04	0.11	0.38(80)	0.705
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.15	26	79.26	0.000
Level 1 effect (r_{ij})	0.21			

Mas_Sag1 = Time 1 mastery social academic goals in the group context
Pap_Sag1 = Time 1 performance-approach social academic goals in the group context
Pav_Sag1 = Time 1 performance-avoidance social academic goals in the group context
Mas_Ago1 = Time 1 mastery achievement goals in the general course
Mas_GG = mastery group goal orientation (calculated as a mean score)
Pap_GG = performance-approach group goal orientation (calculated as a mean score)
Pav_GG = performance-avoidance group goal orientation (calculated as a mean score)

Performance-approach achievement goal orientation.

Due to the minimal differences detected between groups in the intraclass correlation coefficient derived from the unconditional model for performance-approach achievement goal orientation, there was not enough variance at Level 2 to justify a multilevel model. Thus, there were no Level 2 factors included in the analyses for the performance-approach achievement goal orientation outcome variable. As shown in Table 17, the parameter estimate of Time 2 performance-approach achievement goal orientation significantly differed from zero ($\gamma_{00} = 4.48$, $t(29) = 33.72$, $p < .0001$). Of the four student-level variables, students' Time 1 performance-approach achievement goals ($\gamma_{10} = .61$, $t(83) = 4.74$, $p = .0001$), significantly predicted students' Time 2 performance-approach achievement goals. This means that the higher a student has initial performance-approach achievement goals in the beginning of the semester in the course, the more likely they will sustain those performance-approach achievement goals later in the semester. The Level 1 variance explained by this model was found to reduce the Level 1 variance estimate (σ^2) from a value of 1.91 in the unconditional model to a value of 1.27 in the current conditional model. Specifically, the proportion of the Level 1 variance explained in the model was: (1.91 – 1.27)/1.91) = 0.3350 or 33.50%. There was no significant amount of variability remaining in the intercept ($\tau_{00} = .09$, χ^2 (29) = 35.20, $p = .198$).

Table 17

Conditional Model for Student-Level Variables Predicting Time 2 Performance-Approach Achievement Goal Orientation

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	4.48	0.13	33.72(29)	0.000
Pap_Ago1 (γ_{10})	0.61	0.12	4.74(83)	0.000
Mas_Sag1 (γ_{20})	-0.43	0.26	-1.62(83)	0.107
Pap_Sag1 (γ_{30})	0.23	0.14	1.63(83)	0.106
Pav_Sag1 (γ_{40})	0.26	0.26	0.98(83)	0.329
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.09	29	35.20	0.198
Level 1 effect (r_{ij})	1.27			

Pav_Ago1 = Time 1 performance-approach achievement goals in the general course
Mas_Sag1 = Time 1 mastery social academic goals in the group context
Pap_Sag1 = Time 1 performance-approach social academic goals in the group context
Pav_Sag1 = Time 1 performance-avoidance social academic goals in the group context

Performance-avoidance achievement goal orientation.

As displayed in Table 18, the parameter estimate of Time 2 performance-avoidance achievement goal orientation significantly differed from zero (γ_{00} = 5.33, $t(26)$ = 37.92, $p < .0001$). Students' initial performance-avoidance achievement goals (γ_{10} = 0.34, $t(80)$ = 3.86, $p < .0001$) significantly and positively predicted their subsequent performance-avoidance achievement goals in their course. Interestingly, group-level mastery goal orientation (γ_{01} = -.82, $t(26)$ = -2.86, $p < .01$) was a strong, negative predictor of students' Time 2 performance-avoidance achievement goals in their general course. This means that mastery group-level goal orientations, in which groups are focused on the process of developing competence through learning and understanding course material, strongly predicts lower student performance-avoidance achievement goals later in their course. This findings is different from previous studies that have found shared achievement goals for the importance of group work in learning math to predict students' Time 2 performance-avoidance achievement goals in their course (Summers, 2006). The Level 1 variance explained by this model was found to reduce the Level 1 variance estimate (σ^2) from a value of 1.32 in the unconditional model to a value of 1.04 in the current conditional model. Specifically, the proportion of the Level 1 variance explained in the model was: (1.32 – 1.04)/1.32) = 0.2121 or 21.21%. In terms of the variability in the outcome variable between groups, the Level 2 variance explained by this model found to reduce the Level 2 variance estimate (u_{0j}) from a value of 0.49 to 0.23. Particularly, the proportion of variance explained in the model was: (0.49 –

0.23/0.49) = .5306 or 53.06%. A significant amount of variability still remained in the intercept (τ_{00} = .23, χ^2 (26) = 43.04, p = .019).

Table 18

Conditional Model for Student- and Group-Level Variables Predicting Time 2 Performance-Avoidance Achievement Goal Orientation2

Fixed Effects (n =90)	*Coefficient*	*SE*	*t(df)*	*p Value*
Intercept (γ_{00})	5.33	0.14	37.92(26)	0.000
Mas_GG (γ_{01})	-0.82	0.28	-2.86(26)	0.009
Pap_GG (γ_{02})	0.78	0.46	1.67(26)	0.106
Pav_GG (γ_{03})	0.03	0.46	0.08(26)	0.938
Pav_Ago1 (γ_{10})	0.34	0.08	3.86(80)	0.000
Mas_Sag1 (γ_{20})	-0.08	0.24	-0.37(80)	0.712
Pap_Sag1 (γ_{30})	0.11	0.12	0.93(80)	0.355
Pav_Sag1 (γ_{40})	0.30	0.24	1.27(80)	0.208
Random Effects (n = 30)	*Variance Component*	*df*	χ^2	*p Value*
Intercept (u_{0j})	0.23	26	43.04	0.019
Level 1 effect (r_{ij})	1.04			

Mas_Sag1 = Time 1 mastery social academic goals in the group context
Pap_Sag1 = Time 1 performance-approach social academic goals in the group context
Pav_Sag1 = Time 1 performance-avoidance social academic goals in the group context
Pav_Ago1 = Time 1 performance-avoidance achievement goals in the general course
Mas_GG = mastery group goal orientation (calculated as a mean score)
Pap_GG = performance-approach group goal orientation (calculated as a mean score)
Pav_GG = performance-avoidance group goal orientation (calculated as a mean score)

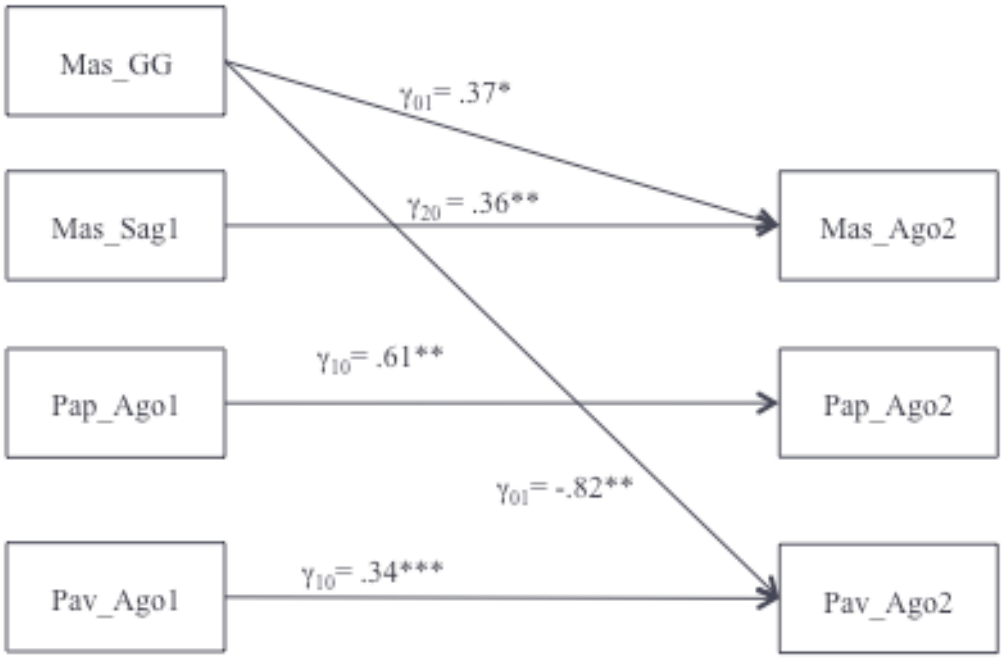
Summary of purpose 3 results.

As shown in Figure 4, these results suggest that both student- and group-level variables contribute to predicting students' Time 2 achievement goal orientations in their general course. Specifically, students' Time 1 mastery social academic goal orientation (γ_{20} = .36, $t(80) = 2.87$, $p = .006$) and group-level mastery goal orientation (γ_{01} = .37, $t(26) = 2.13$, $p < .05$) were significant predictors of students' Time 2 mastery achievement goals. In addition, students' Time 1 performance-approach achievement goals (γ_{10} = .61, $t(83) = 4.74$, p =.0001), significantly predicted the same type of student achievement goals. Furthermore, students' initial performance-avoidance achievement goals (γ_{10} = 0.34, $t(80) = 3.86$, $p < .0001$) significantly and positively predicted their subsequent performance-avoidance achievement goals in their course. Interestingly, group-level mastery goal orientation (γ_{01} = -.82, $t(26) = -2.86$, $p < .01$) was a strong, negative predictor of students' Time 2 performance-avoidance achievement goals in their general course. These findings suggest that student initial achievement goals tend to significantly predict the same type of personal achievement goals later in the course for performance-oriented goals. On the other hand, students' Time 1 mastery social academic goals significantly and positively predicted students' mastery achievement goals later in the semester. This finding supports a *transfer of goal orientation theory,* in which students' social academic goals and group-level goals significantly predict the same type of subsequent achievement goals. It was also interesting to find that group-level mastery goals negatively predicted students' performance-avoidance achievement goals,

suggesting that the group context contributes to the type of achievement goals that students subsequently adopt in their general course.

Figure 4

Purpose 3 results



Mas_Ago2 = Time 2 mastery achievement goals in general course
Pap_Ago2 = Time 2 performance-approach achievement goals in general course
Pav_Ago2 = Time 2 performance-avoidance achievement goals in general course
Mas_GG = mastery group goal orientation (calculated as a mean score)
Mas_Sag1 = Time 1 mastery social academic goals in the group context
Pap_Ago1 = Time 1 performance-approach achievement goals in the general course
Pav_Ago1 = Time 1 performance-avoidance achievement goals in the general course

The next section discusses the qualitative results in the current mixed-methods investigation, which will provide a more in-depth description and explanation of the quantitative findings.

Section 2: Qualitative Analysis

The purpose of the qualitative investigation was to further enrich the quantitative findings by specifically investigating: (1) how students described their personal goals in their group work, (2) how students described their perceptions of their group's goals, and (3) if students described group characteristics that may have influenced their personal goals in their group work and/or personal goals in their general course.

Selection and description of groups.

Two groups in which all members agreed to participate in individual interviews were selected based on their level of group processing, which was calculated based on their group's mean score on students' individual perceptions of their group's effectiveness in working cooperatively in completing group activities in the quantitative analyses. For the qualitative investigation, this construct was based on groups with high versus low group-level scores on group processing. Group A represents the high group processing team, whereas Group B represents the low group processing team. This analysis was conducted in order to determine if there were qualitative differences between the two groups based on the processing level. It is important to note that the meaning of the high versus low group processing groups are not intended to imply that one group was more effective than the other. These distinctions were simply based on the average of group members' perceptions of their group's effectiveness in cooperatively

working together to complete group activities. In addition, the instructor formed all groups based on students' common interests in teaching the same grade-level and personal seating preference in the classroom (see Methods section for information on this process). A brief description of the members within these groups is provided below.

Group A. In Group A, there were two females, Mia and Alma,[1] and one male, Juan. All group members were Mexican-American, ranged from ages 18-20, and were all Education majors. Mia and Alma were freshman and Juan was a junior. Based on initial survey data, Alma and Juan reported having a moderate amount of previous group experience, while Mia reported having very little group work experience. All group members were interested in teaching 4th grade.

Group B. In Group B, there were two females, Wendy and Marie, who were both Caucasian, and an Asian male, Greg. Wendy was a sophomore, Marie was a freshman, and Greg was a senior all majoring in Education. Based on initial survey data, all group members reported having a lot of group work experience. In addition, all group members were interested in teaching 7th grade.

Preliminary analysis: Emergent theoretical codes and themes.

A preliminary reviewing of the interview transcripts was conducted in two stages. (1) Listened to recordings from start to finish, took open handwritten notes, which were recorded in a diagrammatic chart with columns referring to notes that fit each primary research question. (2) At the same time these notes were being recorded in the diagrammatic chart, each section in the columns were labeled with "in-vivo" codes, of

[1] All participants were given a pseudonym for purposes of confidentiality.

words that came out of the data which would provide rich descriptions of participants responses and personal expressions to the questions (Corbin & Strauss, 2008, p. 82). Some examples of these expressions in regards to how students described their personal goals in their group work were: “Getting good grades”, “contributing equally”, “learn from group members”, and “getting job done” to name a few.

Secondary analysis.

After the diagrammatic chart was completed, a secondary analysis was conducted in which I read through each transcript a second time to look for any additional comments or expressions I may have missed during the first read-through and/or make any changes to my initial codes. At this time, I also looked for commonalities and differences among the emergent codes that had arisen during the preliminary analyses. I also attempted to create categories to group codes together, in an attempt to form major themes. Figure 3 depicts a sample of the diagrammatic chart that was used for the coding purposes of this study.

Figure 5

Sample of Diagrammatic Chart for Coding Analyses

Person	Preliminary Open Codes (Open notes)	Prelim. Theoretical Codes	Prelim. Emergent Codes (Second read through)	Categories (Commonalties)	Peer Debriefing
1. Personal Goals					
1	**Personal Group Goals** -Want to have a lot of input, contribute, want everybody to have an equal representation of work, use knowledge later on, apply information, help me get good grades	Lot of input Contribute Equal representation Apply info Get good grades Future goals	-Taking knowledge that can use later on (transfer of knowledge) -Applying something that can help with grades and future as a teacher	**Contributing to Group Work** **Group as Resource to accomplish goals**	**Contributing to Group Work**-Equal representation **Good grades for grad school**-Negative case

Peer debriefing.

In order to increase the accuracy and validity of the categories that were developed for the primary and secondary analyses, I consulted with an individual who was not part of the study to further reflect and gain feedback from a different perspective. This individual has a doctorate in Educational Psychology and has a wealth of knowledge and experience in conducting and analyzing qualitative research. During the debriefing process, I first presented an overview of my study and my overall research questions. Second, I explained the step-by-step procedures I conducted while analyzing the qualitative data, in addition to the logic behind my initial and secondary coding and categorical assumptions. During this process, any conceptual issues were discussed and resolved. For example, we talked about combining related categories and enriching previous categories with additional data.

Section 2: Qualitative Results

When asked to describe their personal goals in their group work, their perceptions of their groups' goals, and their groups' processing while completing group activities, eight major themes emerged from the data: (1) *Students had extrinsic and mastery personal goals in their group,* (2) *Similar personal goals and perceptions of group goals,* (3*) Similar personal goals in group work and personal goals in course,* (4) *Students wanted to use group as a resource,* (5) *Students wanted to contribute to group work in some way,* (6) *Students' personal goals in group work can change,* (7) *Students adopted unique individual roles in their group work, and* (8) *There were different group*

characteristics across groups. The current section describes each of these themes for each group in addition to providing a summary of similarities and differences.

Theme 1: Students had extrinsic and mastery personal goals in their group.

As found in previous studies (Brophy, 2005; Freeman et al., 2002; Horowitz, 2010) and despite the indication that students endorsed performance-approach oriented goals in their group work from the quantitative data, all students expressed a desire to perform well (an extrinsic goal) as a personal goal in their group work, rather than a desire to outperform others in their group (a social comparison aspect of performance-approach goals). In addition, all students acknowledged personal goals for learning and understanding course content in their group work (a mastery goal) and some students expressed a focus on both types of goals in their group work, which supported the quantitative findings. Interestingly, while these types of personal goals were consistent in both groups, the degree to which mastery versus extrinsic goals was important to students seemed to vary across individuals and across groups.

In both Group A and Group B, all members expressed having goals associated with both mastery and extrinsic goals, however, the degree to which mastery versus extrinsic goals were important to students varied across individuals and across groups. For example, although Juan explained that he wanted to learn how to "apply" course concepts later on, he also stated, "…getting good grades is my main focus." In addition, Mia explained that she was mostly concerned about "getting the job done" and "learning as much as possible", while Alma stated, "I think it's more important to improve on my

own learning than my actual grade", suggesting that Alma was more focused on mastering the material than on grades compared to her cooperative peers.

Similarly, in Group B, all group members reported concerns about obtaining good grades in their group work. For example, while Greg expressed having primarily extrinsic-oriented goals, such as "just getting the task accomplished" and "socializing with group members", Wendy and Marie reported being primarily focused on mastering the material by gaining comprehension and application of the course concepts. Interestingly, Marie mentioned that she often held back questions in her group due to fear of hindering the progression of the group. For example, Marie stated, "I don't want to be the one who is lagging…I don't want to be the one who is stopping the progression of the group…I'll hold back on my questions and look back on my own…I have the motivation to do that." Marie's comment about her fear of holding the group back seemed to relate to performance-avoidance goal orientation, which would align with the quantitative findings that found students to endorse high performance-avoidance goals in their groups, especially during the beginning of the semester. I was curious to find out if Marie's, in addition to the other individual group member's personal goals in their groups were related to their perceptions of their group's goals, which led to my second theme, which is described next.

Theme 2: Similar personal goals and perceptions of group goals.

A second question I asked students was to describe their overall perceptions of their group's goals in the course and if they thought those perceptions influenced their personal goals in their group work. When describing their perceptions of their group's

goals, students' group-level perceptions tended to align with their personal goals in their group work across both groups.

In Group A, from the start of their group work, Juan, Mia, and Alma all agreed that their primary goals as a group were to "get good grades" and "understand the material." For example, Juan stated, "When we first talked about our goals as a group, the very first thing that we agreed on was getting good grades and understanding the material…that's what we all came up with. I feel like we already had those goals in mind." He further mentioned, "I think that's what our goal is…to get a good grade" and "We really want to get good grades as well as mastering information." In addition, Mia mentioned, "I think we're all focused on doing well in the class", while Alma stated, "I'm not going to lie and say we're not concerned with getting a passing grade, but I think…we're all about working together and putting in our equal weight…we're interested in learning…in mastering the information too." She further explained, "I know it's not the ideal answer, but everybody wants to get a good grade, nobody wants to fail. We're not scared of failing…It's just…our personalities are kind of the same, we don't like the idea of failing, or we don't like the idea of getting a low grade." It seemed to be the case that all members of the group acquired a sense of shared group goals based on extrinsic and mastery-oriented goals, which also aligned with their personal goals in their group work.

In Group B, Wendy explained that she believed her group was focused on mastering the content, understanding and getting correct answer, stating, "If we understand the material and apply it, a good grade will come out of it." In addition, Marie

stated that she believed her group was primarily focused on answering the questions completely and grammatically correct, but further explained that she was not sure at this point what her group was focused on. Marie stated, "I can tell Wendy is really smart and doing well…I don't really know how Greg is doing…I don't know what we are all working for…I don't know if Greg is doing it to get through the class period. It's more Wendy and I leaning towards each other and Greg kind of just chilling…I think we're still on different pages." As Marie reflected out loud, it seemed evident that she was unsure about what her group, as a whole, was focused on accomplishing due to Greg's lack of involvement. When hearing Greg's opinion, he mentioned that he felt his group was primarily focused on "just learning the proper things…proper questions and answers" and getting the task accomplished because that's what affects their grade, "…it's not just my grade or her grade, it's all our grades." Furthermore, Greg mentioned that he felt part of his group's goals was to "just not to look stupid" in front of other groups and that sometimes his group used strategies such as "copying other groups answers" before presenting their own answer to questions in class. This description seems to be related to perceptions of performance-avoidance group goal orientation. Interestingly, Greg and Marie seemed to perceive more extrinsic-oriented group goals compared to Wendy. Nonetheless, all group members seemed to perceive both extrinsic/performance-avoidance and mastery-oriented group goals, with the exception of Marie, who was mostly unsure.

Although both groups seemed to endorse both extrinsic and mastery-oriented group goals, it appeared that Group A was more focused on mastery-oriented goals compared to Group B.

Theme 3: Similar personal goals in group work and personal goals in course.

Given that the quantitative findings found limited differences between students' social academic goals in their group work and their achievement goals in the general course, I was interested in seeing if students described having different or similar personal goals in their group context and their course in general. As anticipated, students had a difficult time differentiating personal goals within their group context and in the general course. It appeared that students viewed themselves as having the same type of goals regardless of whether or not they were working with their cooperative peers or by themselves in the classroom. For example, when asked if they had different personal goals in their course in general compared to their personal goals in their group work, all students in Group A indicated that they had the same type of personal goals. Though Juan and Alma referenced their goals as the same, with the only difference being that they were working towards their personal goals collectively in their group versus individually when they worked alone on general course assignments.

One person in Group B reported that she felt her personal goals in the course were different from her personal goals in her group. Marie explained that in her class in general, she felt more focused on "not drifting off", compared to in her group where she was more focused on making sure that everyone in her group was "on the same page." It appeared that being in a group with other people, forced Marie to be more attentive in

making sure the work was getting accomplished. She also described feeling less accountable in her group work since she felt that Wendy as a hard working and reliable group member. For example, Marie explained, "I could tell Sarah works hard…I'll know she'll do it….I know she's on the right track." While Marie's description clearly indicates that she was primarily focused on extrinsic-oriented goals for making sure that the work was getting done in her group, her expressions also revealed she was relying on Wendy to ultimately get the job done, which relates to an additional type of goal where students were focused on using their group as a resource.

Theme 4: Students wanted to use group as a resource.

All group members in both groups indicated that their group functioned as a resource in helping them to accomplish their personal goals in their group work, future goals, and other purposes. Interestingly, the purposes associated with this theme were different across groups.

In Group A, all members reported that their group was a resource in accomplishing their personal goals in their group work, course work, and future goals. For example, Juan stated, "I want to get a good grade and I feel like group work might be able to help me with that" and "I just want to learn classroom applications…like stuff that we can use to apply when we are future teachers." During this explanation, Juan referred to himself and his group members, indicating that he was aware that his cooperative peers were also focused on future goals for being teachers. According to his group members, Mia reported that she wanted to get ideas and different perspectives from her peers, in addition to learning as much as possible. Similarly, Alma referenced her group as a

resource in helping her gain a better understanding of how to work with others in future classes, and would help her in the long run, especially in the workforce, stating, "….anything you decide to do, there's going to be some form of working in a group."

Similarly, all members in Group B specified that they found their group work useful in helping them accomplish their personal goals, future goals, and other purposes. For example, Wendy mentioned that her group work was a resource in helping her develop teamwork skills that would come in handy in the long run, stating, "…it's a skill that will stay with me for my entire life, whether that's in my future job, raising a family, even just…leisurely activities." In addition, Marie explained that group work was something that would help her with her work in the course because she was able to learn and understand the material, get the work done, get good grades, and learn from others opinions and study strategies. In contrast, Greg mentioned that his group was a useful resource for catching him up in the class, stating, "If I have any questions or… if I ever missed the class, they bring notes….". Greg's explanation suggests that he found his group useful for keeping him up to speed in the class, rather than to help him accomplish particular future goals, as the majority of the other group member's expressed.

Theme 5: Students wanted to contribute to group work in some way.

In addition to using their group as a resource, students also consistently mentioned the importance of contributing to their group work. Interestingly, all group members in both groups expressed that they were also focused on contributing to their group's work in some way. However, this theme did not just involve group members participating in cooperative group activities, but making sure that they contributed

equally. For example, all group members mentioned that they were concerned about: "contributing equally", have "equal representation of work", provide an "equal share", "[do their] part", and making sure that they are "pulling [their] equal weight."

Two group members mentioned personal goals for contributing to group work in different ways. For example, Wendy used phrases such as, "for my personal goals, it is important to make sure that everyone is contributing equally to whatever work we're doing…splitting it up and dividing it…working together versus one person doing all of it or none of it." From her expression, Wendy seemed to be more concerned about making sure that everyone else in their group was contributing equally, rather than being concerned about her own contributions. On the other hand, Greg mentioned that he was concerned about whether his "input was recorded or annotated or helpful in a way", which indicates that he wanted to make sure that his suggestions were being included.

Theme 6: Students' personal goals in group work can change.

In addition to learning more about what students were primarily focused on in their cooperative groups, I also learned that students' personal goals can and do change across time. For instance, when students reflected on their personal goals in the beginning of the semester, to the time of the interview, which was about 9 weeks into their group work engagement in the course, members in both groups expressed having subtle changes of their personal goals in their group work. Specifically, Juan and Mia felt that they became more focused on mastery-oriented goals as time progressed. For example, in the beginning of the semester, Juan reported being primarily focused on "getting good grades", however, after he realized that the course applied to his future goals for being a

teacher, he stated, “I wanted to take in as much information that I could possibly use in the future.” On the other hand, Mia indicated that she was more concerned with contributing enough to her group in the beginning of the semester. She further explained, “I know one of my group members has experienced designing classes already, and he always comes up with a lot of ideas while it takes me a while to think of ideas. Since I’m not really experienced with that…I’m worried that it’ll seem I’m not doing my part.” When reflecting on her personal goals later in the course, Mia explained that she felt comfortable sharing her ideas more after getting to know her group members better. This suggests that Mia may have been more focused on performance-avoidance goals in the beginning of the semester by being fearful of not contributing enough to her group due to her lack of experience in designing lessons compared to Juan. This finding supported the quantitative results, which suggested that students endorsed higher performance-avoidance goals compared to mastery and performance-approach in the beginning of the semester. Additionally, Alma stated “…at the beginning of the semester, I just want to get this amount of points to get [an] A…that’s all I was worried about, but once we started working in groups….I realized that I can’t do it all on my own…I really have to focus on and put a lot of my efforts [too].”

In Group B, only Marie felt that her personal goals in her group work changed throughout the semester. For example, in the beginning of the semester she was more concerned with pulling her own weight and later she was more concerned that everyone in her group was working together. Specifically, Marie stated, “My goals are still to get a good grade, but at the same time, I’m still trying to balance making sure that everyone

knows what we are doing." Marie's expression suggests that she was focused on balancing goals related to concerns about her group, in addition to her personal goals.

Theme 7: Students adopted unique individual roles in their group work.

In addition to describing their personal goals in their group work, all members in both groups also reported focusing on goals in reference to *individual roles* in their cooperative groups.

Leadership and contribution roles.

For example, Juan and Alma mentioned obtaining *Leadership roles* in their group, however, with different meanings associated. In particular, Juan described that he "wanted to have a lot of input" and mentioned that he often did the work himself on his own such as initiating a get together with another group member to go over the group assignment that was going to be completed in the class the next day. Alma stated, "I like to be the group leader, I just take the leadership role" and further explained that she was more focused on "being able to facilitate everyone's idea, and being able to…display it well, or correctly the way…they're asking for…just learning how to be the best team player that I can be." In addition, Alma stated, "If you get a good grade out of it, I feel it's even more rewarding for me, because I'm able to say, 'Oh, I led our group to do this.' Alma's leadership role relates to her personal mastery-oriented goal in her group work, because she is focused on developing teamwork skills, in addition to efficiently accomplishing group activities. However, her leadership role also indicated that she was focused on extrinsic goals from her statement referring to a good grade being a rewarding experience. While these two members had similar leadership roles, they executed the role

in different ways. On the other hand, Mia stated, "I'm always focused on trying to come up with ideas that might sometimes be different, or things that maybe my other group members didn't think of." Thus, Mia seemed to be holding a role associated with contributing new and innovative ideas to her group. These individual roles seemed to also be associated with contributing to the group in some way.

Accommodating, harmonizing, and social loafing roles.

Wendy and Marie also reported having additional goals in reference to roles in their group work. For example, Wendy mentioned having an *Accommodating role* in her group in which she was concerned about catching Greg up and incorporating him into the group work. In particular, Wendy stated, when Greg is absent, "I get to focus on whatever I want [in group work]…I don't really have to worry about him." In addition, Marie mentioned being concerned about making sure that everyone is working together. Specifically, Marie stated, "I don't want it to be just Wendy and I or Greg and I…I want it to be all of us working together…it's important for us to all get a good grade and understand the material, to all be on the same page with it." To accomplish this goal, Marie reported, "As much as I'd kinda just like to sit back and just listen to something I just want to make sure that we are all kind of on the same page" and "I think it's kind of with my core value that I have to just make sure that everyone feels comfortable and included." According to her description, it seemed that Marie engaged in a *Harmonizing role*, in which she was focused on making sure everyone in the group was working cooperatively in getting the work done. In contrast, Greg had mentioned that he was more focused on "getting as much out of the group as possible" and that he "sees no difference

between working alone and working in a group." Given Greg's description and his group member's concerns about is lack of involvement, Greg seemed to seldom provide contribute in providing feedback to the group and seemed to think that he could get by without doing his fair share on group tasks. "Such behavior has been well-documented as social loafing phenomenon" (Thompson & Ku, 2006, p. 372). Thus, it may be possible that Greg partook a *Social Loafing role* in his group context.

Theme 8: There were different group characteristics across groups.

During my interviews with students, there appeared to be several distinct group characteristics that were described between the two groups.

Good communication, bond, shared understanding of goals, and equal contribution from all group members.

For example, in Group A, Juan expressed that in his group, he felt that there was a "good sense of communication…we've developed a good bond." From my individual interviews with Group A members, it also seemed evident that they shared the same type of personal goals, understood each other's goals and roles, and could rely on each other. For instance, Juan stated, "I could really rely on them and it makes the class a lot easier." In addition, Juan reported that he believed his group members were contributing their fair share and he viewed them as "academically inclined." Similarly, Mia stated that she felt her group members shared ideas, were able to come to agreement on ideas, and do their equal parts. She also expressed that she understood her group member's personal goals, and that they had a lot in common, such as having the same majors, other classes together, and are all Mexican-American. Interestingly, Mia stated that her group's

effectiveness has made her try a lot harder to prepare for group assignments, "so that I know I'll have my part done when we get together." In addition, Alma stated, that her group introduced ideas, could agree on the best ideas, talk over ideas, contribute equal weight, are not afraid to share ideas with each other or reject ideas, and that she feels comfortable suggesting alternative ideas to get the job done correctly.

Lack of communication, lack of shared understanding of goals, and lack of equal contribution from all group members.

In Group B, Wendy indicated that her group was effective when it was just she and Marie working together, stating, "I'm not sure about Greg." Wendy further explained that she believes she and Marie share the same goals and feels comfortable talking to Marie. In regards to Greg, Wendy explained, "Greg does his own thing", he does not attend class often, and does not give alternative ideas, "I can't relate to Greg." Similarly, Marie stated, "I first expected to be on the same page …we're just very different…I think its different working with someone like Greg because I've never worked in a group with someone like Greg…I think it's just hard when we're not all working on the same thing…I'm just not clear on what we're working towards." In reference to her opinion about her group's effectiveness in fulfilling the expectations of group activities, Marie explained, "I don't think we exceeded them, we get it done, but I don't think it's flying colors." Moreover, Greg expressed, "I'm usually on the shorter end of the stick…they're always telling me why it's this or that." He further explained, however, that he was lucky that his group was helping him. Greg described that he thinks his group shares the same goals for primarily getting a good grade, stating, "…it does affect your grade, so…grade

is like number one priority…we all are working together in just getting the best possible grade." On an additional note, Greg further expressed that while its nicer to have more minds in group work, "its also a downfall because it's not just your personal opinion that counts anymore."

Summary of major similarities across groups.

Six of the eight major themes emerged as fairly similar across groups: (1) *Students had extrinsic and mastery personal goals in their group,* (2) *Similar personal goals and perceptions of group goals,* (3*) Similar personal goals in group work and personal goals in course,* (4) *Students wanted to use group as a resource,* (5) *Students wanted to contribute to group work in some way,* and (6) *Students' personal goals in group work can change*. All group members seemed to report personal goals associated with mastery and extrinsic-oriented goals in their group work, as well as performance-avoidance goals. However, group members did not express behaviors or goals relative to performance-approach goals in which they were concerned about outperforming their cooperative peers. In addition, students' personal group goals seemed to match their perceptions of their group-level goals, in addition to their personal goals for the course in general. Furthermore, all students acknowledged their group as a useful resource and expressed desires for contributing to their group work in some way. Lastly, all students described having subtle changes in their personal group goals across time. In addition to these similarities across both groups, there were also distinctions found between groups.

Summary of major differences across groups.

Two of the eight major themes emerged as fairly distinct across groups: (7) *Students adopted unique individual roles in their group work* and (8) *There were different group characteristics across groups.* Specifically, all group members seemed to express having individual roles in their cooperative groups that differed across groups. In Group A (high effectiveness group), members had individual roles associated with leadership and contributing new ideas. These roles seemed to benefit the group, for the most part, in that they were centered on effectively and efficiently completing the work, in addition to learning and incorporating new ideas, which seemed to align with each individual's personal goals in their group. In Group B, (low effectiveness group), group members expressed individual roles associated with accommodating other group members, creating harmony, and social loafing.

In addition to individual roles, there were prominent group characteristics that emerged. For example, Group A reported having good communication, a good bond, shared understanding of individual and group goals, and equal contribution from all group members. In contrast, Group B reported having a lack of communication, a lack of shared understanding of individual and group goals, and unequal contributions from all group members. These findings lend implications for future research and practitioners, which are discussed in the next chapter.

Chapter V: Discussion

The overall purpose of the current mixed-methods investigation was to determine whether and how student- and group-level factors influence the type of goal orientations that students adopt in their cooperative group work and general course. Specifically, the aim of the quantitative investigation was to: (1) determine if student-level and group-level factors significantly predicted students' social academic goal orientations, (2) examine the role of group processing in moderating the relationship between student's individual perceptions of their group's goal orientations and their social academic goals in group work, and (3) explore a transfer of goal orientation theory in which students' social academic goal orientations predict their subsequent achievement goals in the course. In addition, this question investigates group-level factors that may contribute to students' achievement goals.

Furthermore, the purpose of the qualitative investigation was to further enrich the quantitative findings by specifically investigating the role of group processing in student perceptions of their individual and group goals. Questions examined in this analysis included: (1) how students described their personal goals in their group work, (2) how students described their perceptions of their group's goals, and (3) group characteristics described by students that may have influenced their personal goals in their group work and/or personal goals in their general course.

This chapter provides an embedded discussion of the conclusions drawn from the quantitative and qualitative results, followed by a review of limitations and suggestions for future research.

Predictors of Social Academic Goal Orientations

The influence of student- and group-level factors in predicting students' social academic goals in their group context was investigated for purpose one of this study. According to situated motivation (Volvet, 2001) and socially shared cognition (Nye & Brower, 1996) theories, an individuals' motivation and cognition is situated and socially influenced by interactions in his or her social learning context. These theories emphasize the importance of investigating group-level characteristics in predicting the goal orientations that students adopt within their group environment, and even beyond, into their general classroom setting. Thus, this part of the investigation assumed that student perceptions of their group's goal orientations would significantly predict their social academic goals in their cooperative group work, while also accounting for students' initial achievement goals in their course and their initial social academic goals as predictors. In addition, this study took a step further by examining student perceptions of their group's goal orientations (calculated as a mean score) to determine if group-level factors contributed to a student's Time 2 social academic goals.

In the current study, group-level mastery goal orientation, in which groups are focused on learning and developing understanding from group work, significantly predicted students' Time 2 mastery social academic goal orientation their group context. This finding supports the hypothesis that group-level goal orientations significantly

contribute to predicting students' later social academic goals in their cooperative groups. Another hypothesis was that student perceptions of their group's goal orientations would significantly predict their adoption of the same type of social academic goal later in the semester. Based on the quantitative results, student perceptions of performance-approach group goal orientation significantly and positively predicted their Time 2 performance-approach and performance-avoidance social academic goals. However, perceived performance-avoidance group goal orientation was a significant negative predictor of students' Time 2 performance-approach social academic goals. These findings suggest that both student- and group-level perceptions of group goal orientations significantly predicted the type of social academic goals that students endorsed at Time 2 in their cooperative groups.

Specifically, when cooperative groups were focused on the process of learning, developing understanding, and gaining competence from group work experiences, the individual members within those groups were more likely to sustain their mastery-oriented goal orientations within their group context. This finding supports the research conducted by Summers (2006), which found that shared achievement goals about the importance of group work for learning math predicted students' mastery achievement goals later in the course. Additionally, the current finding supports results found by Blazevski et al, (2005), which indicated that college students' perceptions of their group's mastery goal orientation (calculated as a mean score) predicted higher student engagement in their cooperative groups. Moreover, this research also supports Blazevski et al's finding that college student perceptions of performance group goal orientation

predicted student social loafing behavior in their cooperative groups. Given that social loafing behavior—in which an individual exerts less effort and motivation to contribute to group work, has been significantly linked to high ego-orientation (i.e. performance-approach goal orientation), I hypothesized that student perceptions of performance-oriented group goal orientations would significantly predict their adoption of personal performance-approach and/or performance-avoidance social academic goals in their group context. This hypothesis was confirmed in the current study, however, in an unexpected way.

Surprisingly, student perceptions of performance-approach and performance-avoidance group goal orientations had different effects on students' Time 2 performance-approach social academic goals. While perceived performance-approach group goal orientation was a positive predictor, perceived performance-avoidance group goal orientation was a negative predictor of students' performance-approach social academic goal orientation. This means that students who perceived their group to be focused on outperforming other groups were more likely to endorse the same type of goal orientation for outperforming their cooperative peers within their group context. On the other hand, students who perceived their group to be focused on avoiding the demonstration of incompetency or failure in front of other groups were less likely to focus on goals for outperforming their cooperative peers.

These findings support Blazevski et al's (2005) research in that student perceptions of performance-approach group goal orientation predicted their adoption of performance-approach and performance-avoidance social academic goals in their group

work, which may have also been related to student social loafing behavior. This assumption emerged in the qualitative data. For example, in the low group processing team (Group B), in which two out of the three group members described their group as being primarily extrinsic and performance-avoidance oriented, one particular group member, Greg, was described by his group peers as being less engaged in contributing, cooperating, and communicating with his team members. Furthermore, when describing his personal goals in his group work, Greg mentioned phrases such as "socializing", "getting as much out of the group as possible", and indicated that he did not see any difference between working alone and in a group, which all seem to be related to social loafing phenomenon (Thompson & Ku, 2006). Furthermore, the indication that students' perceptions of performance-avoidance group goal orientation negatively predicted students' performance-approach goals in their group work suggests that students were less likely to be concerned about outperforming their cooperative peers when they perceived their group to be focused on avoiding failure and incompetence in front of other groups.

These findings seem to contradict previous research. For example, Linnenbrink (2005) posited that *between-group competition* (groups competing with other groups) may promote participants' adaptive patterns of learning, engagement, and social interactions by fostering a greater sense of group cohesion and teamwork. The current study contradicts this theoretical assumption because student perceptions of performance-approach group goal orientation positively predicted students' performance-approach (*within-group* competition) and performance-avoidance (*potential lack of contribution*)

social academic goals within their group context. On the other hand, student perceptions of performance-avoidance group goal orientation predicted lower student performance-approach goals within their group context, suggesting that a sense of shared group goals for avoiding failure in front of other groups may have strengthened a sense of social cohesion and teamwork within the group, thus diminishing *within-group competition*.

In light of the quantitative findings, the qualitative interviews provided a clearer description of the type of personal goals students were particularly focused on during their group work. Consistent with previous qualitative research investigating student achievement goal orientations, the current findings suggested that students primarily focus on extrinsic and mastery-oriented goals (Brophy, 2005; Freeman et al., 2002; Horowitz, 2010; Urdan & Mestas, 2006). The qualitative analyses enriched the understanding of students' personal goals within their group contexts.

Extrinsic, mastery, and mastery-extrinsic personal goals in group work.

While self-reported survey data suggested that students endorse performance-approach goals in their group work, this type of goal orientation was not spontaneously expressed during the qualitative interviews. Rather, students expressed having personal extrinsic oriented goals such as, "getting the work done" or "getting a good grade" and mastery oriented goals such as, "learning as much as possible" and "understanding the content" in their group work. While two students (one in each group) mentioned having goals that were related to performance-avoidance social academic goals, such as concerns about " not contributing enough" or "holding back questions" in front of group members, interestingly, students did not mention having goals associated with performance-

approach goals. In particular, students did not express comparing themselves to their cooperative peers. This finding is in line with previous qualitative studies (Brophy, 2005; Freeman et al., 2002; Horowitz, 2010; Urdan & Mestas, 2006).

Similar personal goals and perceptions of group-level goals.

According to the quantitative findings, student perceptions of their group's performance-approach goal orientations significantly predicted the same type of goal orientation in addition to performance-avoidance goals in their group work. While students expressed having similar personal goals as their perceived group goals, no students reported being concerned about outperforming other groups or endorsing personal performance-approach goals. Instead, students expressed perceiving the same type of extrinsic and mastery group goals. Students failed to specifically mention how they thought their group context may have influenced their personal goals.

Contribution to group work.

Additionally, students consistently mentioned personal goals related to contributing to their group work. Interestingly, all group members in both groups expressed that they were also focused on contributing to their group's work in some way. However, the purposes for contributing to group work appeared to be slightly different across groups. For instance, while the majority of group members expressed goals for "contributing equally" and "doing their part", one group member in Group B (low perceived group processing) mentioned personal goals for making sure that "everyone is contributing equally" in the group. Another group member in the same group mentioned that he was more concerned about whether his "input was recorded or annotated or

helpful in a way", which indicates that he wanted to make sure that his suggestions were being included in group activities.

Personal goals in group work can change.

Interestingly, students also expressed a slight shift in their personal goals in their group work across time. Particularly, the qualitative data found that several students from both groups indicated that they changed from being more shy and hesitant to share ideas in the beginning of the semester, but after getting to know their group members more as the class progressed, they acquired more mastery-oriented goals, in which they were more willing to share ideas and learn from group members. This seemed to be supported in the quantitative findings such that students' initial social academic goals were not as significantly predictive of their Time 2 social academic goals compared to their student- and group-level perceptions of their group's goal orientations.

The Moderating Role of Group Processing

In an attempt to address the call for more research that examines "the mechanisms by which students come to endorse personal achievement goals within the group context" (Pintrich et al., 2003, p. 331), the second purpose of this study was to examine the role of group processing—the extent to which students perceived their group as effectively cooperating to achieve group tasks (calculated as a mean score). Specifically, this research question attempted to examine group processing as moderating the extent to which student perceptions of their group's goal orientations predicted the same type of social academic goals in their cooperative group work. As found in the first purpose of the study, only the relationship between students' perceptions of performance-approach

group goal orientation and their Time 2 performance-avoidance social academic goals significantly varied across groups. Therefore, only this relationship was further investigated for purpose two of this investigation. While the multilevel modeling results indicated that group processing did not act as a significant moderator, a major focus of the qualitative investigation was to determine if there were any differences between groups with high versus low group processing.

According to the qualitative results, while students' personal goals in their group work, their perceptions of group goals, and their course goals were fairly similar across groups, there appeared to be distinct student- and group-level characteristics described by members across both groups.

Differences in group processing characteristics.

For example, students in the high group processing team (Group A) described having good communication, a good bond, and shared understanding of each other's goals. On the other hand, Group B reported having a lack of communication, lack of shared understanding of individual and group goals, and unequal contributions from all group members. The lack of perceived group effectiveness in Group B seemed to be due to a lack of contribution and effort from one particular group member, Greg, and seemed to hamper the cooperative social interactions and cohesiveness within their group context.

Individual roles in group work.

Interestingly, a recurrent theme that arose out of the qualitative interviews was that group members in each group seemed to acquire additional individual roles in their group context. These roles were not assigned, but naturally adopted based on the group

environment. For example, in Group A, students reported roles associated with leadership and contributing new ideas. The purpose of these roles seemed to be aimed at helping the group get the work done more efficiently within the allotted time and ensure that their group's tasks incorporated creative and innovative ideas. Students in Group B reported having accommodating, harmonizing, and social loafing roles. For example, Wendy expressed concerns about accommodating Greg, while Marie reported being concerned about making sure everyone in the group was working well together. On the other hand, Greg reported wanting to "get as much as possible out of his group" and reported feeling lucky that he was in a group that helped him catch-up on the course material he missed when he was absent. This leads to the next theme, which related to students being concerned about contributing to the group in some way. Interestingly, while most group members across both groups were concerned about contributing their fair share to group work, and contributing new ideas, Greg was more concerned about making sure that his input was included in the group's final products, rather than contributing for the sake of learning or getting the task accomplished. Hence, Greg was perceived as the social loafer in Group B. According to Blazevski et al., 2005, students' perceptions of performance-oriented groups predicted higher student social loafing behavior, whereas higher mastery group goal orientation predicted higher student engagement. Based on the qualitative findings, Group A (high perceived group processing) seemed to report being more mastery-oriented than Group B (low perceived group processing), suggesting that mastery group goals may be related to higher student engagement (Blazevski et al., 2005).

Using group as a resource.

Even though all group members reported viewing their group as a useful resource in accomplishing not only their current personal goals in their course, but also their future goals, interestingly, the meaning associated with this theme was different across groups. For example, while most members expressed using their group as a resource to accomplish their goals for getting a good grade in the class, learning the material, and applying knowledge in their future career as a teacher, in Group B, Greg indicated that he found his group useful in helping him catch up in the course. Greg's explanation suggests that he utilized his group as a resource to compensate for his lack of involvement in the course, rather than to help him accomplish particular future goals, as the majority of the other group member's expressed.

These results suggest that group processing may qualitatively influence the type of additional roles and motives that students acquire within their group context, which has implications for future research on how group dynamics may impact students' cognitive and motivational processes. That is, if the purpose of cooperative group learning is for students to essentially learn from their cooperating peers, it is worth investigating the role of group processing on student learning and motivation within and outside the group context (Johnson & F. Johnson, 1982; Slavin, 2003; Yager et al., 2001).

Predictors of Achievement Goal Orientations

Given the proliferation of cooperative group learning in classrooms today and the assumption that group learning promotes student mastery goal orientation (Ames, 1992; Brophy, 2004; Epstein, 1987), several researchers have investigated student achievement

goal orientations across classrooms that incorporate cooperative learning as an instructional tool. From these studies, students tend to endorse higher mastery achievement goal orientation in classrooms that practice cooperative group learning, versus traditionally lecture-based classrooms (Ciani, et al., 2008; Nichols & Miller, 1993; Summers & Svinicki, 2007). However, this does not necessarily indicate that all cooperative learning fosters student mastery goal orientation. For example, Pintrich et al., (2003) contended, "even if students share perceptions of the teacher's practices and the classroom goal structure, the small group context may elicit different goals as students perceive it as a distinct subcontext" (p. 330). According to this perspective, it may be possible that the type of goal orientations that students adopt within their group context may *transfer* and predict the same type of achievement goal orientations that students adopt later in their general course (as typically researched in the achievement goal literature). In addition to these student-level cognitive representations within the group context, group-level characteristics (e.g., group goal orientations) may contribute to predicting students' subsequent achievement goal orientations in the general course.

Thus, the third purpose of this study was to explore a *transfer of goal orientation*, in which students' social academic goal orientations predict the same type of achievement goal orientations that students endorse later in their general course. In support of this hypothesis, the quantitative results indicated that both group-level mastery goal orientation and students' mastery social academic goal orientation significantly and positively predicted students' subsequent mastery achievement goals later in the course. Interestingly, group-level mastery goal orientation was also a strong, negative predictor

of students' performance-avoidance achievement goals later in their general course, with students' initial performance-avoidance achievement goals as an additional significant predictor. In regards to performance-approach achievement goals, only students' entering performance-approach achievement goal orientation was a significant and positive predictor, suggesting that no group-level goal orientation factors significantly contributed to that type of goal orientation.

These findings support previous studies that have found cooperative learning to promote students' mastery achievement goal orientation (Ciani et al., 2008; Nichols & Miller, 1993; Summers & Svinicki, 2007). In addition, the current findings both support and contradict previous research by Summers (2006), which found that students' shared achievement goals about the importance of group work for learning math positively predicted students' Time 2 mastery and performance-avoidance achievement goal orientations. Specifically, the current study supports the contention that mastery group-goal orientation, in which groups are focused on the process of learning and developing competence, contributes to predicting and/or sustaining students' mastery achievement goal orientation later in their course. On the other hand, however, the opposite was found in Summer's (2006) study such that shared achievement group goals predicted student performance-avoidance achievement goal orientation across time. In the current investigation, group-level mastery goal orientation was found to significantly decrease students' performance-avoidance achievement goals later in the course. That is, students who perceived their group to be mastery-oriented were less likely to focus on avoiding the demonstration of incompetence or failure in front of others later in their course.

Moreover, the current study supported the hypothesis that students' mastery social academic goal orientations would significantly predict students' subsequent mastery achievement goal orientations in their general course. This finding indicates that students who acquired mastery social academic goals in their group context were more likely to endorse mastery achievement goal orientations later in their course. This particular finding supports a transfer of goal orientation, in which students' social academic goals significantly and positively predict the same type of achievement goals later in their course. Interestingly, neither student performance-approach nor performance-avoidance social academic goals significantly predicted students' subsequent performance-oriented achievement goal orientations. Instead, students' initial achievement goals were significant predictors of the same type of student performance-oriented achievement goals later in the semester. These finding were further explained by the qualitative interviews.

Similar personal goals in group work and in course.

Specifically, the qualitative interviews found that students reported similar personal goals in their group work and in their general course. In particular, students had difficulty differentiating between their personal goals within their group context versus their general course. This occurrence may have been attributed to a variety of reasons. First, it may be that students viewed their "personal goals" as more general, rather than situated. For instance, given that cooperative group work was such an integral part of the classroom culture, students may not have perceived their groups to be a separate subcontext within the overall classroom setting. Another reason why students may have

reported similar goals could be due to the way in which the interview questions were deliberately worded, as a more generalized and open-ended question, rather than specific to a particular goal orientation. Third, given the prominent relationship between performance-approach and performance-avoidance goal orientations in the literature, it may be more difficult to tease out differences between the two goal orientations and or significantly capture the complexity of each goal orientation across the group and course contexts.

Interpretation of Embedded Results: Final Conclusions

Altogether, the embedded results supported the hypothesis that the group context influenced the type of goal orientations that students adopted within and outside their cooperative groups. This research advances previous studies by considering groups as meaningful subcontexts within the classroom setting. According to social cognitive perspectives, "people working independently within a group structure do not function as social isolates totally immune to the influence of those around them" (Bandura, 1997, p. 469). In this study, it was demonstrated that students were indeed influenced to some extent by their group context and adopted certain goal orientations based on their student- and group-level perceptions within and outside their cooperative groups. These findings support the notion that student cognition and motivation are situated and contextual (Linnenbrink & Pintrich, 2002).

In addition, while group processing did not significantly moderate the relationship between students' perceptions of their group's goal orientations and their later social academic goals, the qualitative interviews found that groups with varying levels of group

processing had distinct characteristics that influenced the type of individual roles and motives that students naturally adopted in their cooperative groups, in addition to their personal extrinsic and mastery-oriented goals.

Furthermore, a transfer of goal orientation was supported in that students' mastery social academic goals and mastery group-level goal orientation positively and significantly predicted their subsequent achievement goals in the course. However, these relationships were moderate, were only found for mastery goal orientation, and may be explained by other student or group-level factors. Nonetheless, these findings offer implications for both researchers and practitioners interested in understanding how cooperative group learning may enhance or hinder students' adoption of mastery versus performance-oriented goals within and outside their cooperative learning groups.

Limitations

The current study is not without limitations. First, the small sample size may have reduced the statistical power of analyses for the proposed research questions. Although there appears to be no set rule for minimum sample sizes in MLM, researchers are in general agreement that statistical power suffers at lower sample sizes (Raudenbush & Bryk, 2002). Despite the presumed robust nature of MLM with regard to sample size issues, it is clear that any small number of students representing the groups will limit conclusions drawn about the nature of the Level 2 variability in the results of this study.

Second, there was potential for small effect sizes due to possible weaknesses in the underlying relationships between the constructs explored, which could have been attributed to the limited duration of the study and/or the inclusion of multiple explanatory

variables in the HLM models. Specifically, while it made theoretical sense to include all the predictor variables in the models in order to account for potential relationships, this method may have produced spurious findings due to the low ICCs. It is recommended that future studies include fewer variables in their HLM models in order to minimize this issue. Third, while the current study used mean scores of individuals' perceptions as a group-level (Level 2) measure, which was used in similar studies (Blazevski et al., 2005; Summers, 2006), according to James, Joyce & Slocum (1988), "there must be some - consensus among group members about an organizational climate before the mean rating can be considered a characteristic of the organization" (as cited in Davidson, Kwak, Seo, & Choi, 2002, p. 232). Although the use of group-referent measures of individual's perceptions of an organizational context has been conceptually recommended and used in the educational psychology literature (Blazevski et al., 2005; Bandura, 1997; Goddard, Hoy, W. & Hoy A.; Summers, 2006), it is advised that readers take caution when interpreting the results of aggregated data due to susceptibility in loss of information, reduced statistical power, and appropriateness in modeling interactions between student-level and group-level descriptors (Beretvas, 2007; 2009).

An additional limitation was the low practical significance, which could have been due to the methodology design or multicollinearity issues between performance-approach and performance-avoidance group goal orientations (r = .88), which may have contributed to the negative R^2's for performance-avoidance social academic goal and mastery achievement goal outcomes at Time 2. Methodologists (Hox, 2002; Roberts & Monaco, 2006; Snijders & Bosker, 1999) have cautioned against putting too much

emphasis on using these R^2's as descriptors of the predictors' influence on the outcome. The reason for their caution is that it is possible to encounter negative values for this kind of R^2 even when a predictor or predictors are contributing to the prediction of the outcome. Based on Roberts and Monaco (2006), this can happen when level two predictor(s) are added to a model in which the outcome does not vary much at one of the levels in the model. While Roberts and Monaco (2006) note that a negative R^2 does not imply that the coefficients and their statistical tests are incorrect, this issue must be considered when interpreting results and conducting future research.

In terms of external validity, there are several design features that may limit the generalizability of the study results. For example, this study incorporated a single undergraduate education course at a large university that is considered to be a fairly homogeneous sample taken from a classroom with an instructor who is a well-known expert in educational psychology and has a vast amount of teaching experience at the postsecondary education level. These factors may have limited the ability to generalize study findings to students in other grade-levels or academic settings.

The variation in individuals' perceptions of their group's goal orientation may also be an issue. For example, individual members within a single group may report having complete opposite measures of group goal orientations. Therefore, it would be impossible to categorize groups into a single goal orientation. To handle this issue, the current study utilized separate MLM analyses to tease out each categorical group goal orientation mean score. A limitation to this approach however, is that it does not take into

account a multiple goal perspective, which has been studied and suggested in the achievement motivation literature (Barron & Harackiewicz, 2001; Pintrich, 2000).

Also, it is unknown whether the given limited time-frame in assessing group goal orientation is an adequate representation of their groups' actual goals. For example, Tuckman (1965) coined a process of the stages of group development: forming (first stage of group development), storming (conflict/confrontation stage), norming (establishment of group norms stage), and performing (stage in which effective collaboration occurs) (Tuckman, 1965). However, it is unknown at what point groups reach the norming stage, in which it would seem plausible to assess a type of established group norm (e.g. group goal orientations). Lastly, despite the advantages of using MLM in the analysis of nested data sets, the results drawn from both the quantitative and qualitative data do not allow for casual conclusions. Thus, readers should be cautioned that causal implications were not the intention of the current study.

Overall, these limitations highlight the need for additional research that measures the impact of the group context in a variety of ways, especially as researchers seek to understand the benefits of group-based learning on student educational outcomes.

Future Research

Future research may seek to expand the current study by using latent profile analysis to capture the complex nature of multiple goal endorsement at the student- and group-levels. For example, while we know that individuals and classrooms can endorse multiple goal orientations at the same time, less is understood about goal orientations within various group contexts. It is essential that future research consider potential

combined (e.g., mastery/performance-approach or mastery/performance-avoidance) group goal orientation profiles to establish a better understanding of how these conditions influence student achievement motivation. Future studies should also consider investigating the current and other student- (e.g., interest, self-efficacy, learning, cognitive load) and group-level (e.g., group cohesiveness, collective efficacy beliefs) predictor and outcome variables in regards to the impact of group functioning on student educational outcomes. For example, as found in the qualitative findings from the current study, there are a range of additional student- and group-level characteristics that came into play within the group context that may influence other motivational, cognitive, and behavioral outcomes. Future research examining this phenomenon across diverse classroom settings with different grading structures is also needed to see if the same or similar student- and group-level factors influence the type of goal orientations that students' adopt within their group context and beyond into the overall course. This research would also be better served by using a larger sample size to adequately test the relationships proposed in the current study. In addition, the use of a mixed-methods or qualitative approach would provide a better understanding of the role of the group context in predicting student outcomes and how students actually develop and sustain particular goal orientations more than others across time. Qualitative explorations will also help to strengthen our understanding about particular observational group dynamics and/or characteristics associated with different group-level goal orientations. Also, considering the wide implementation of cooperative group-based learning across a variety of disciplines and settings, it is suggested that future investigations examine the

role of the group context in predicting student learning gains, transfer of knowledge and skills, and/or the use of adaptive learning strategies through longitudinally-based methods. Furthermore, given that students are often expected to learn from their novice cooperating peers in group work, these situations may heighten students concerns about potentially learning incorrect or inaccurate information. Hence, it would be interesting to examine the inclusion of mastery-avoidance goals to provide a richer picture of how goal orientations may or may not emerge on the basis of the group context.

Finally, while there is a great deal of advice offered in the literature about the benefits of cooperative learning on student motivation and engagement, these recommendations are mostly theoretically-based with little empirical evidence. This study found that cooperative group work does not always promote student mastery goals for attaining competence through learning and understanding course material (Blazevski et al., 2005; Summers, 2006). This leaves implications for teachers who incorporate cooperative learning as an instructional tool, such that teachers should not automatically assume that cooperative group learning is always beneficial to student learning, motivation, and engagement. There are several group contextual factors such as perceived group goal orientations, group membership, and other group dynamics that may impact the extent to which group-based learning promotes positive student outcomes. Thus, it is critical that future researchers and practitioners consider groups as potential subcontexts within the classroom environment that form their own social structures influencing student achievement motivation within and outside their group learning context.

Appendix A

[Participant Characteristic Questions]

Please respond to the following questions so that we may better understand your background related to this study. Your responses will remain confidential.

1. What is gender?
    a. Male
    b. Female
2. What is your age? _____
3. What ethnicity do you identify with?
    a. African American
    b. Asian
    c. Hispanic/Latino/a
    d. Native American/PI
    e. Caucasian
    f. Other (please specify)
4. What is your classification?
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Other_____
5. In what college is your major located?
    a. College of Education
    b. School of Architecture
    c. McCombs School of Business
    d. College of Communication

e. College of Natural Sciences
f. Cockrell School of Engineering
g. College of Fine Arts
h. Jackson School of Geosciences
i. College of Liberal Arts
j. School of Nursing
k. School of Social Work
l. 12. School of Undergraduate Studies

6. What is your current estimated GPA? _____
7. What is your Participant number? _____
8. What is your Group number? _____
9. What is your UTEID? _____

Appendix B

[Individual Course Achievement Goal Orientations]

Mastery goal orientation (α= .87; Harackiewicz et al., 2008)

1. The most important thing for me in this course is to understand the content as thoroughly as possible.
2. Mastering the material in this course is important to me.
3. I want to learn as much as possible in this class.
4. I like it best when something I learn in this course makes me want to find out more.
5. In a class like this, I prefer course material that really challenges me so I can learn new things.
6. My goal in this class is to learn as much as I can about this topic.
7. In a class like this, I prefer course material that arouses my curiosity even if it is difficult to learn.

Performance-approach goal-orientation (α= .87; Harackiewicz et al., 2008)

8. It is important for me to do well compared to others in this class.
9. I don't care about how I do compared to the other students in this class. (reversed)
10. I want to do better than other students in this class.
11. My goal in this class is to get a better grade than most of the other students.

Performance-avoidance goal-orientation (α= .78; Harackiewicz et al., 2008)

12. I just want to avoid getting a low grade in this class.
13. I just want to avoid doing poorly in this class.

Appendix C

[Individual Goal Orientations in Group Work (Context 1)]

Please respond to the following statements regarding your goals for learning in your group. Your responses will remain confidential.

Individual mastery goal orientation

1. I wanted to learn as much as possible from this group work.
2. I wanted to gain more knowledge through this group work.
3. It was important for me to understand the content thoroughly as a result of this group work.
4. I wanted to improve my skills in this task although it was challenging.

Individual performance-approach goal orientation

5. It was important to me to do better than the other members in my group work.
6. It was important to me to look smart compared to other members in my group.

Individual performance-avoidance goal orientation

7. I often thought to myself, “what if I can not solve problems well in this group work?”
8. I just wanted to avoid doing poorly in my group.
9. I just wanted to avoid being considered incompetent in the group.
10. My fear of doing poorly motivated me in this group work.

Appendix D

[Perceived Group Goal Orientations (Context 3)]

Please respond to the following statements regarding your perceptions of your groups' goals for learning. Your responses will remain confidential.

Group-within-a-group mastery goal orientation

1. We wanted to learn a lot from working as a group.
2. We wanted to learn as much as possible working in a group.
3. It was important for us to understand the content as thoroughly as possible.

Group-within-a-group performance-approach goal orientation

4. We wanted to complete problems successfully better than other groups.
5. We wanted to do the problems better than the other groups.
6. We wanted to outperform other groups in solving problems.

Group-within-a-group performance-avoidance goal orientation

7. We did not want to look incompetent compared to other groups.
8. We didn't want to make a lot of mistakes in solving the problems compared to other groups.
9. We wanted to avoid doing worse than other groups.

Appendix E

[Group Processing]

Group Processing—Evaluation

1. Overall, each of the group members contributed his or her fair share.
2. Overall, my group was effective working together.
3. Typically, my group had a clear understanding of the expectations for the group tasks.
4. Overall, my group members responded positively to peer questions.
5. Typically, most group members shared their own ideas during group work.
6. My group was successful in completing the requirements of most tasks.

Appendix F

[Consent Form]

IRB PROTOCOL #: 2011-08-0089

You are invited to participate in a study about collaborative group work and individual motivation. The study is being conducted by doctoral student, Laura G. Torres, of the Educational Psychology Department of The University of Texas at Austin, email address: (lgtorres@me.com). This form provides you with information about the study. Before you decide whether or not to participate, please read the information below and let us know if there is anything you don't understand. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You can stop your participation at any time simply by telling the researcher you wish to stop participation, and your refusal will not impact current or future relationships with UT Austin. Whether you agree to participate in this study will not be revealed to your instructor until final grades have been submitted and will have no chance of affecting your grade in this class.

The purpose of this study is to explore the development of group goal orientations and their impact on student motivation for engaging in collaborative group work. To participate in the study, you do not need to do much beyond your regular course requirements. What I am asking you to do is to allow me to use what you have already completed as a regular part of the course for research purposes and possibly participate in an individual interview to allow me to gain more insights about what happened during your group's in-class interactions.

If you agree to be in this study, I will ask your permission for the following (Note that you may agree to some or all of the listed items):

- Allow the researcher to access your responses to surveys the teacher has assigned as part of class.

- Allow the researcher to look at the group analysis activity completed in class by your group.
- Allow the researcher to schedule an individual interview of no more than an hour at a place and time convenient to you and grant permission to record the interview so that the researcher can refer to the audio recording later.

Total estimated time to participate will be nothing beyond the time it takes to complete course tasks (with the exception of the interviews), which will be no more than one hour.

Risks of being in the study include:

- The only risks from participation in this study are those associated with loss of confidentiality. However, all information will be coded using a pseudonym to protect your identity.
- This study may involve additional risks that are currently unforeseeable. If you wish to discuss the information above or any other risks you may experience, you may ask questions now or email the Principal Investigator (Laura Torres) listed on the front page of this form.

Benefits of being in the study:

- There are no direct benefits to study participants beyond the contributions that may contribute to improvements of educational environments in the future.

Compensation there is no compensation for participating in this study.

Confidentiality and Privacy Protections:

- The survey responses will be gathered via an online system as a part of the course requirements. Your responses will be collected for research purposes and will be analyzed by the researcher. Any reported results will use a pseudonym.
- Information about survey responses will be stripped of all identifying information

by the principal investigator.

- Your name, and the names of all your team members to which you may refer during the interview, will be substituted with pseudonyms on the transcript produced from the interview.
- Your instructor will not be made aware of your participation in the interview until after final grades have been submitted to the Registrar.

The records of this study will be stored securely and kept confidential. Authorized persons from The University of Texas at Austin and members of the Institutional Review Board have the legal right to review your research records and will protect the confidentiality of those records to the extent permitted by law. All publications will exclude any information that will make it possible to identify you as a subject. Throughout the study, the researchers will notify you of new information that may become available and that might affect you decision to remain in the study.

Contacts and questions:
If you have any questions about the study please ask now. If you have questions later, want additional information, or wish to withdraw your participation, call the researcher conducting the study. Her name and e-mail address is at the top of page 1.

If you would like to obtain information about the research study, have questions, concerns, complaints or wish to discuss problems about a research study with someone unaffiliated with the study, please contact The University of Texas at Austin Institutional Review Board (IRB) for the Protection of Human Subjects at (512) 471-8871. Anonymity, if desired, will be protected to the extent possible. As an alternative method of contact, an email may be sent to orsc@uts.cc.utexas.edu or a letter sent to IRB Administrator, P.O. Box 7426, Mail Code A 3200, Austin, TX 78713.

Statement of Consent:

I have read the above information and have sufficient information to make a decision about participating in this study. I understand that the researcher will protect the confidentiality of the data and my privacy by replacing my name with a pseudonym. I consent to participate in the study in the following ways.

Yes	No	
		I grant permission for the researcher to have access to my responses to surveys I have completed or will complete as part of this class.
		I grant permission for the researcher to have access to my group analysis activity completed during class.
		I grant permission for the researcher to schedule an individual interview of no more than an hour at a place and time convenient to me and grant permission to record the interview so that the researcher can refer to the audio recording later. [*Note: only some students will be selected to participate in individual interviews in this course].

Participant Name (Print Name): _____ Date: _____

Participant Signature: _____ Date: _____

Principal Investigator Signature: _____ Date: _____

Laura Torres

You will be given a copy of this information to keep for your records.

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